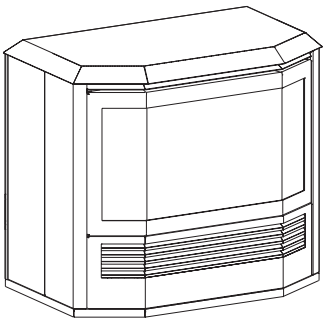
EMPIRE COMFORT SYSTEMS

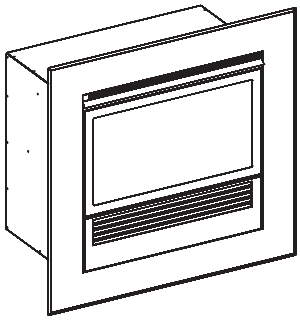
Mantis™

INSTALLATION INSTRUCTIONS

⚠ WARNING

HOT GLASS WILL CAUSE BURNS.
DO NOT TOUCH GLASS UNTIL COOLED.
NEVER ALLOW CHILDREN TO TOUCH GLASS.





NATIONAL FIREPLACE INSTITUTE® NFI CERTIFIED www.nficertified.org

We suggest that our gas hearth products be installed and serviced by professionals who are certified in the U.S. by the National Fireplace Institute® (NFI) as NFI Gas Specialists.

POWER-VENT HIGH-EFFICIENCY FIREPLACE WITH

BAY WINDOW MANTIS MODELS
BF28(B,C,G)M(N,P)-5
BI28(B,C,G)M(N,P)-5
BP28(B,C,G)M(N,P)-5

FIREPLACE MANTIS MODELS
FF28BM(N,P)-3
FI28BM(N,P)-3
FW28BM(N,P)-3

DESIGN CERTIFIED

WARNING: If not installed, operated and maintained in accordance with the manufacturer's instructions, this product could expose you to substances in fuel or from fuel combustion which can cause death or serious illness.

Attention: Check local codes for venting requirements.

Installer: Leave this manual with the appliance.
Consumer: Retain this manual for future reference.

WARNING: If the information in these instructions are not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- **Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.**
- **WHAT TO DO IF YOU SMELL GAS**
  - **Do not try to light any appliance.**
  - **Do not touch any electrical switch; do not use any phone in your building.**
  - **Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.**
  - **If you cannot reach your gas supplier, call the fire department.**
- **Installation and service must be performed by a qualified installer, service agency or the gas supplier.**

Young children should be carefully supervised when they are in the same room as the appliance. Toddlers, young children and others may be susceptible to accidental contact burns. A physical barrier is recommended if there are at risk individuals in the house. To restrict access to a fireplace or stove, install an adjustable safety gate to keep toddlers, young children and other at risk individuals out of the room and away from hot surfaces.

This appliance may be installed in an aftermarket, permanently located, manufactured home (USA only) or mobile home, where not prohibited by state or local codes.

This appliance is only for use with the type of gas indicated on the rating plate. This appliance is not convertible for use with other gases, unless a certified kit is used.

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IMPORTANT SAFETY INFORMATION

THIS IS A HEATING APPLIANCE

Safety markings are frequently used in this manual to designate a degree or level of seriousness and should not be ignored.

⚠ WARNING indicates a potentially hazardous situation that if not avoided, could result in personal injury or death.

⚠ CAUTION indicates a potentially hazardous situation that if not avoided, may result in minor or moderate injury or property damage.

⚠ WARNING

This appliance must be installed and repaired by a qualified service person who is familiar with the proper installation and operation of the Mantis Power-Vent High Efficiency Fireplace. Installers who are not familiar with the installation of the Mantis and have questions, should contact Empire Comfort Systems, Inc. prior to installing the appliance to avoid creating a hazardous operating condition.

- **Due to high temperatures the appliance should be located out of traffic and away from furniture and draperies.**
- **Children and adults should be alerted to the hazards of high surface temperatures and should stay away to avoid burns or clothing ignition.**
- **Young children should be carefully supervised when they are in the same room as the appliance. Toddlers, young children and others may be susceptible to accidental contact burns. A physical barrier is recommended if there are at risk individuals in the house. To restrict access to a fireplace or stove, install an adjustable safety gate to keep away toddlers, young children and other at risk individuals out of the room and away from hot surfaces.**
- **Clothing or other flammable material should not be placed on or near the appliance.**
- **Any safety screen or guard removed for servicing an appliance, must be replaced prior to operating the appliance.**
- **Keep burner and control compartment clean.**
- **For manufactured home (USA only) or mobile home or residential installation convertible for use with natural gas and liquefied petroleum gases when provision is made for the simple conversion from one gas to the other.**

⚠ WARNING

Installation and repair should be done by a QUALIFIED SERVICE PERSON. The appliance should be inspected before use and at least annually by a qualified service person. More frequent cleaning may be required due to excessive lint from carpeting, bedding materials, etc. It is imperative that control compartments, burners and circulating air passageways of the appliance be kept clean.

- **DO NOT put anything around the heater that will obstruct the flow of combustion and ventilation air.**
- **DO keep the appliance area clear and free from combustible material, gasoline and other flammable vapors and liquids.**
- **DO examine venting system periodically and replace damaged parts.**
- **DO make a periodic visual check of burner. Clean and replace damaged parts.**
- **DO NOT use this heater if any part has been under water. Immediately call a qualified service technician to inspect the heater and to replace any part of the control system and any gas control which has been under water.**
- **DO NOT operate this appliance without the front panel installed.**

Note to the Installer

1. The installer must leave instruction manual with owner after installation.
2. The installer must have the owner fill out and mail registration card supplied with the heater.
3. The installer should show the owner how to start and operate heater and thermostat.
4. The installer must locate unit near a grounded wall receptacle for 115VAC power and must provide gas supply and vent the unit properly for safe operation.

SAFETY INFORMATION FOR USERS OF LP-GAS

LP-Gas (Propane) is a flammable gas which can cause fires and explosions. In its natural state, propane is odorless and colorless. You may not know all the following safety precautions which can protect both you and your family from an accident. Read them carefully now, then review them point by point with the members of your household. Someday, there may not be a minute to lose, everyone's safety will depend on knowing exactly what to do. If, after reading the following information, you feel you still need more information, please contact your gas supplier.

LP-GAS WARNING ODOR

If a gas leak happens, you should be able to smell the gas because of the odorant put in the LP-Gas. That's your signal to go into immediate action!

- Do not operate electric switches, light matches, use your phone. Do not do anything that could ignite the gas.
- Get everyone out of the building, vehicle, trailer, or area. Do that IMMEDIATELY.
- Close all gas tank or cylinder supply valves.
- LP-Gas is heavier than air and may settle in low areas such as basements. When you have reason to suspect a gas leak, keep out of basements and other low areas. Stay out until firefighters declare them to be safe.
- Use your neighbor's phone and call a trained LP-Gas service person and the fire department. Even though you may not continue to smell gas, do not turn on the gas again. Do not re-enter the building, vehicle, trailer, or area.
- Finally, let the service man and firefighters check for escaped gas. Have them air out the area before you return. Properly trained LP-Gas service people should repair the leak, then check and relight the gas appliance for you.

NO ODOR DETECTED - ODOR FADE

Some people cannot smell well. Some people cannot smell the odor of the chemical put into the gas. You must find out if you can smell the odorant in propane. Smoking can decrease your ability to smell. Being around an odor for a time can affect your sensitivity or ability to detect that odor. Sometimes other odors in the area mask the gas odor. People may not smell the gas odor or their minds are on something else. Thinking about smelling a gas odor can make it easier to smell.

The odorant in LP-gas is colorless, and it can fade under some circumstances. For example, if there is an underground leak, the movement of the gas through soil can filter the odorant. Odorants in LP-Gas also are subject to oxidation. This fading can occur if there is rust inside the storage tank or in iron gas pipes.

The odorant in escaped gas can adsorb or absorb onto or into walls, masonry and other materials and fabrics in a room. That will take some of the odorant out of the gas, reducing its odor intensity.

LP-Gas may stratify in a closed area, and the odor intensity could vary at different levels. Since it is heavier than air, there may be more odor at lower levels. Always be sensitive to the slightest gas odor. If you detect any odor, treat it as a serious leak. Immediately go into action as instructed earlier.

SOME POINTS TO REMEMBER

- Learn to recognize the odor of LP-gas. Your local LP-Gas Dealer can give you a "Scratch and Sniff" pamphlet. Use it to find out what the propane odor smells like. If you suspect that your LP-Gas has a weak or abnormal odor, call your LP-Gas Dealer.
- If you are not qualified, do not light pilot lights, perform service, or make adjustments to appliances on the LP-Gas system. If you are qualified, consciously think about the odor of LP-Gas prior to and while lighting pilot lights or performing service or making adjustments.
- Sometimes a basement or a closed-up house has a musty smell that can cover up the LP-Gas odor. Do not try to light pilot lights, perform service, or make adjustments in an area where the conditions are such that you may not detect the odor if there has been a leak of LP-Gas.
- Odor fade, due to oxidation by rust or adsorption on walls of new cylinders and tanks, is possible. Therefore, people should be particularly alert and careful when new tanks or cylinders are placed in service. Odor fade can occur in new tanks, or reinstalled old tanks, if they are filled and allowed to set too long before refilling. Cylinders and tanks which have been out of service for a time may develop internal rust which will cause odor fade. If such conditions are suspected to exist, a periodic sniff test of the gas is advisable. If you have any question about the gas odor, call your LP-gas dealer. A periodic sniff test of the LP-gas is a good safety measure under any condition.
- If, at any time, you do not smell the LP-Gas odorant and you think you should, assume you have a leak. Then take the same immediate action recommended above for the occasion when you do detect the odorized LP-Gas.
- If you experience a complete "gas out," (the container is under no vapor pressure), turn the tank valve off immediately. If the container valve is left on, the container may draw in some air through openings such as pilot light orifices. If this occurs, some new internal rusting could occur. If the valve is left open, then treat the container as a new tank. Always be sure your container is under vapor pressure by turning it off at the container before it goes completely empty or having it refilled before it is completely empty.

REQUIREMENTS FOR MASSACHUSETTS

For all side wall horizontally vented gas fueled equipment installed in every dwelling, building or structure used in whole or in part for residential purposes, including those owned or operated by the Commonwealth and where the side wall exhaust vent termination is less than seven (7) feet above finished grade in the area of the venting, including but not limited to decks and porches, the following requirements shall be satisfied:

1. INSTALLATION OF CARBON MONOXIDE DETECTORS.
   At the time of installation of the side wall horizontal vented gas fueled equipment, the installing plumber or gasfitter shall observe that a hard wired carbon monoxide detector with an alarm and battery back-up is installed on the floor level where the gas equipment is to be installed. In addition, the installing plumber or gasfitter shall observe that a battery operated or hard wired carbon monoxide detector with an alarm is installed on each additional level of the dwelling, building or structure served by the side wall horizontal vented gas fueled equipment. It shall be the responsibility of the property owner to secure the services of qualified licensed professionals for the installation of hard wired carbon monoxide detectors
   a. In the event that the side wall horizontally vented gas fueled equipment is installed in a crawl space or an attic, the hard wired carbon monoxide detector with alarm and battery back-up may be installed on the next adjacent floor level.
   b. In the event that the requirements of this subdivision can not be met at the time of completion of installation, the owner shall have a period of thirty (30) days to comply with the above requirements; provided, however, that during said thirty (30) day period, a battery operated carbon monoxide detector with an alarm shall be installed.

2. APPROVED CARBON MONOXIDE DETECTORS. Each carbon monoxide detector as required in accordance with the above provisions shall comply with NFPA 720 and be ANSI/ UL 2034 listed and IAS certified.

3. SIGNAGE. A metal or plastic identification plate shall be permanently mounted to the exterior of the building at a minimum height of eight (8) feet above grade directly in line with the exhaust vent terminal for the horizontally vented gas fueled heating appliance or equipment. The sign shall read, in print size no less than one-half (1/2) inch in size, **"GAS VENT DIRECTLY BELOW. KEEP CLEAR OF ALL OBSTRUCTIONS".**

4. INSPECTION. The state or local gas inspector of the side wall horizontally vented gas fueled equipment shall not approve the installation unless, upon inspection, the inspector observes carbon monoxide detectors and signage installed in accordance with the provisions of 248 CMR 5.08(2)(a) 1 through 4.
   (b) EXEMPTIONS: The following equipment is exempt from 248 CMR 5.08(2)(a)1 through 4:
      1. The equipment listed in Chapter 10 entitled "Equipment Not Required To Be Vented" in the most current edition of NFPA 54 as adopted by the Board; and
      2. Product Approved side wall horizontally vented gas fueled equipment installed in a room or structure separate from the dwelling, building or structure used in whole or in part for residential purposes.
   (d) MANUFACTURER REQUIREMENTS - GAS EQUIPMENT VENTING SYSTEM NOT PROVIDED. When the manufacturer of a Product Approved side wall horizontally vented gas fueled equipment does not provide the parts for venting the flue gases, but identifies "special venting systems", the following requirements shall be satisfied by the manufacturer:
      1. The referenced "special venting system" instructions shall be included with the appliance or equipment installation instructions; and
      2. The "special venting systems" shall be Product Approved by the Board, and the instructions for that system shall include a parts list and detailed installation instruction.
   (e) A copy of all installation instructions for all Product Approved side wall horizontally vented gas fueled equipment, all venting instructions, all parts lists for venting instructions, and/or all venting design instructions shall remain with the appliance or equipment at the completion of the installation.

Sate of Massachusetts: The installation must be made by a licensed plumber or gas fitter in the Commonwealth of Massachusetts.

INTRODUCTION

⚠ WARNING

The safety information listed below must be followed during the installation, service, and operation of this product. Failure to following the safety recommendations could result in possible damage to the equipment, serious personal injury, or death.

Additional code information listed below is for reference purposes only and does not necessarily have jurisdiction over local or state codes. Always consult with local authorities before installing any gas appliance.

Combustion and Ventilation Air
U.S.: National Fuel Gas Code NFPA 54/ANSI Z223.1(NFGC), Air for Combustion and Ventilation.

Electrical Connections
U.S.: National Electrical Code (NEC) ANSI/NFPA 70

Gas Piping and Gas Pipe Pressure Testing
U.S.: NFGC and National Plumbing Codes

General Installations
U.S.: Current edition of the NFGC and NFPA 90B. For copies contact the National Fire Protection Association Inc., Batterymarch Park, Quincy, MA 02269 or American Gas Association, 400 N. Capitol, N.W., Washington DC 20001 or www.NFPA.org.

Safety
U.S.: NFGC NFPA 5/ANSI Z223.1

SPECIFICATIONS & ACCESSORIES

Fireplace Mantis Models	F(F,I,W)28BM(N,P)
Input BTU/HR (KW/H)	15,000 (4.39) Rear - 13,000 (3.81) Front
Height	24-9/16”
Width	28”
Depth	17-3/16”
Gas Inlet (Pipe)	3/8” Flair
Electrical - The unit comes equipped with a 5 foot (1.5 m) 3 pronged cord, for connection to an approved 115 VAC, 60 Hz, 5A (maximum) wall receptacle.	
Vent Pipe: 1-1/2 inch diameter schedule 40 PVC pipe, 40 feet maximum equivalent length with 3 90° elbows.	

Bay Window Mantis Models	B(F,I,P)28(B,C,G)M(N,P)
Input BTU/HR (KW/H)	19,000 (5.57) Rear - 9,000 (2.64) Front
Height	25-1/4”
Width	28”
Depth	17-5/8”
Gas Inlet (Pipe)	3/8” Flair
Electrical - The unit comes equipped with a 5 foot (1.5 m) 3 pronged cord, for connection to an approved 115 VAC, 60 Hz , 5A (maximum) wall receptacle.	
Vent Pipe: - 1-1/2 inch diameter schedule 40 PVC pipe, 40 feet maximum equivalent length with 3 90° elbows.	

ACCESSORIES	
Common	
Part Number	**Description**
TRW	Wall Thermostat - Wireless Remote
FRBTP	Battery Operated Remote with Programmable Thermostat
PVCA	Colinear Adapter
PVCT	Colinear Transition Kit
PVVK-CFA	Flex Vent Kit
PVVK-FC	Single Flue Horizontal Vent Kit
PVVK-SV	Single Flue Vertical Vent Kit
PVVTC	Vertical Termination Cap - 1-1/2”
PVVK24H	Co-axial Horizontal Direct Vent Kit (24”)
PVVK48H	Co-axial Horizontal Direct Vent Kit (48”)
Bay Window Mantis	
CIFPB-1C	Corner Floor Pad Kit
CIPFP-1	Floor Pad Kit
PV-2H	Slim Top Cover Kit
PV-4H	Short Top Cover Kit
PVE-1	Metal Surround Kit, 35”
PVE-2	Metal Surround Kit, 38”
PVPK	Pedestal Kit
PVSH	Rear Shroud
Fireplace Mantis	
FWK28(BL,CM,HP,SS)	In-Wall Surround Kit, Picture Frame
FHK28(BL,SS)	In-Wall Surround Kit, Louverless
FIK28(BL,CM,HP,SS)	38” Wide x 30-7/8” Tall Insert Surround Kit
FFK28(BL,CM,HP,SS)	35” Wide x 29-3/8” Tall Fireplace Mantel Surround Kit

INSTALLATION AND GENERAL SAFETY INFORMATION

General Information
This series is designed certified in accordance with American National Standard/CSA Standard Z21.88 as a Gas Fireplace Heater to be installed according to these instructions.

Any alteration of the original design, installed other than as shown in these instructions will be the responsibility of the person and company making the changes, and will void the warranty. This product may not be used with any type of gas other than what is shown on the rating plate.

Important
All Correspondence should refer to complete Model Number, Serial Number and type of gas.

Installation
Installation, replacement, gas piping, gas utilization equipment or accessories, and the repair and service of this equipment must be performed by a qualified agency. The term “qualified agency” means any individual, firm, corporation or company which either in person or through a representative is engaged in and is responsible for (a) the installation or replacement of gas piping or (b) the connection, installation, repair or servicing of equipment, who is experienced in such work, familiar with all precautions required and has complied with all the requirements of the authority having jurisdiction.

- This installation must conform with local codes, or in the absence of local codes, the National Fuel Gas Code, NFPA 54/ANSI Z223.1.
- This fireplace, when installed, must be electrically grounded in accordance with local codes or. In the absence of local codes, with the National Electrical Code, ANSI/NFPA 70.
- Provide adequate clearances around the fireplace for servicing and ensure there are no obstructions to the combustion air intake situated at the back of the fireplace. Refer to Pages 24 to 27.
- The Mantis Power-Vent High-Efficiency Fireplace must be installed on a flat, solid continuous surface (i.e. wood, metal, concrete). Rough or uneven surfaces can cause vibration or humming in the fireplace.
- **This fireplace must be installed in such a way that the fireplace can be removed for servicing the heat exchanger and the flue that are located in the rear section of the fireplace.**
- **This fireplace is equipped with a three-prong [grounding] plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle. Do not cut or remove the grounding prong from this plug.** For an ungrounded receptacle, purchase an adapter with two prongs and a wire for grounding.

Note: Under no circumstances should the fireplace be installed under conditions that would not allow for easy removal of the fireplace to carry out routine inspection and service to the fireplace.

Note: Where a mantel surround is being used on insert installations and zero clearance fireplace installations, the combustion air intake slot located in the top mantel surround must not be obstructed. This will allow combustion air to enter through the slot to the combustion air inlet located at the back of the fireplace.

Note: During initial firing of this unit, residual oil from the heat exchanger may bake off and smoke may occur. Provide adequate ventilation to the area where the fireplace is installed to prevent triggering of smoke alarms. Refer to page 40 for more detail.

A manufactured home (USA only) or mobile home OEM installation must conform with the Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280, or when such a standard is not applicable, the Standard for Manufactured Home Installations, ANSI/NCSBCS Z225.1, or Standard for Gas Equipped Recreational Vehicles and Mobile Housing, CSA Z240.0.

Installation on Combustible Flooring
If this fireplace is to be installed directly on carpeting, tile, or other combustible material, other than wood flooring, the fireplace shall be installed on a metal or wood panel extending the full width and depth of the fireplace.

The base referred to above does not mean the fire-proof base as used on wood stoves. The protection is primarily for rugs that may be extremely thick and light-color tile that can discolor.

Installation in Residential Garages
Gas utilization equipment in residential garages shall be installed so that all burners and burner ignition devices are located not less than 18 inches (457 mm) above the floor. The equipment shall be located, or protected, so it is not subject to physical damage by vehicles.

Operation of Fireplace During Construction
The fireplace shall not be used during construction.

⚠ WARNING

Do not operate fireplace with the glass front removed, or if it is cracked or broken. Replacement of the glass shall be performed by a licensed or qualified service person

GAS SUPPLY

All gas piping must be installed in compliance with local codes and utility regulations. In the absence of local codes the installation must comply with NFCG NFPA 54/ANSI Z223.1.

Note: Never use plastic pipe. Check to confirm whether your local codes allow copper tubing or galvanized.

Where permitted, flexible gas connectors must be certified to the following standards:

— ANS Z21.24 Appliance Connectors of Corrugated Metal Tubing and Fittings
— ANS Z21.45 Assembled Flexible Appliance Connectors of Other Than All-Metal Construction

The above connectors may be used if acceptable by the authority having jurisdiction. The state of Massachusetts requires that a flexible appliance connector cannot exceed three feet in length.

A drip leg should be installed in the vertical gas supply pipe run to the unit.

Manual Shut-off Valve

Some local regulations require the installation of a manual shut-off valve and ground joint union external to the fireplace. The shutoff should be accessible for service and/or emergency use. Consult the local utility or gas supplier for additional requirements regarding the placement of the manual shut off valve. Compounds used on threaded joints of gas piping shall be resistant to the action of liquefied petroleum gases.

Leak Testing

⚠ WARNING - FIRE OR EXPLOSION HAZARD

Never test for leaks with an open flame. Check all connections using a commercially available soap solution. A fire or explosion may result causing property damage, personal injury or loss of life. Failure to follow the safety warnings exactly could result in serious injury, death or property damage.

After gas piping to the fireplace is complete, all connections must be tested for gas leaks. This includes pipe connections at the main gas valve, emergency shutoff valve and flexible gas connectors (if applicable). The soap and water solution can be applied on each joint or union using a small paintbrush. If any bubbling is observed, the connection is not sealed adequately and must be retightened. Repeat the tightening and soap check process until the bubbling ceases.

Important Note:

When pressure testing the gas supply lines at pressures greater than ½ psig (14 in. w.c.), the gas supply piping system must be disconnected from the fireplace to prevent damage to the gas control valve. If the test pressure is less than or equal to ½ psig (14 in. w.c.), close the manual shut-off valve.

Pressure Testing of the Gas Supply System

1. To check the inlet pressure to the gas valve, a 1/8 inch N.P.T. plugged tapping, accessible for test gauge connection, must be placed immediately upstream of the gas supply connection to the fireplace.
2. The fireplace and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig.
3. The fireplace must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psig.

Recommended Gas Pipe Diameter

Pipe Length	Schedule 40 Pipe Inside Diameter In Inches		Tubing, Type L Outside Diameter In Inches	
	Nat.	L.P.	Nat.	L.P.
0-10 feet	1/2	3/8	1/2	3/8
10-40 feet	1/2	1/2	5/8	1/2
40-100 feet	1/2	1/2	3/4	1/2
100-150 feet	3/4	1/2	7/8	3/4

VENT CLEARANCES

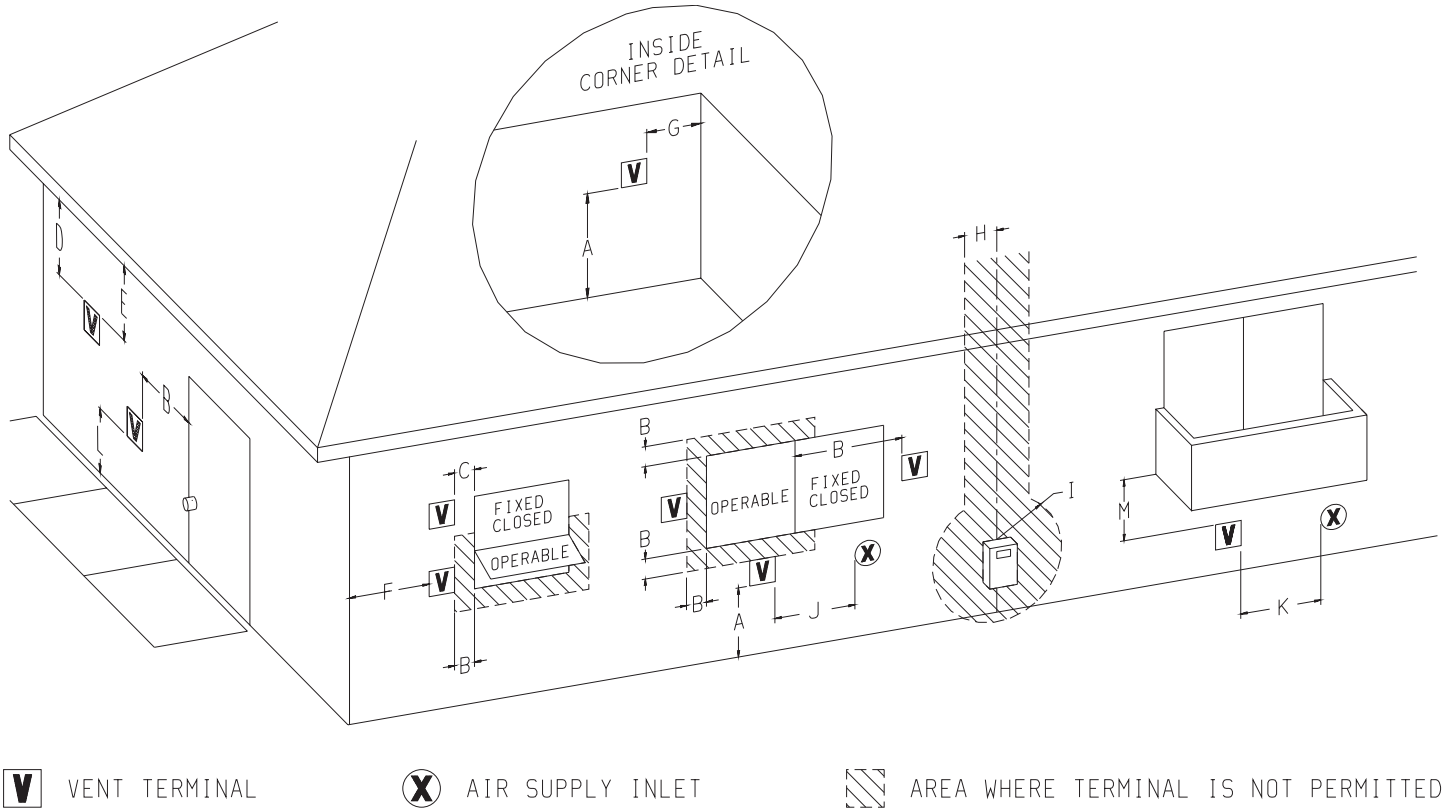


Figure 1

US Installation 1

A =	Clearance above any grade, veranda, porch or balcony	12 in (30 cm)
B =	Clearance to window or door that may be opened	6 in (15 cm) for appliances ≤ 10,000 Btu/h (3 kW), 9 in (23 cm) for appliances > 10,000 Btu/h (3 kW) and ≤ 50,000 Btu/h (15 kW), 12 in (30 cm) for appliances > 50,000 Btu/h (15 kW)
C =	Clearance to permanently closed windows	*
D =	Vertical clearance to ventilated soffit located above the terminal within a horizontal distance of 2 ft (61 mm) from the center line of the terminal	*
E =	Clearance to unventilated soffit	*
F =	Clearance of outside corner	*
G =	Clearance of inside corner	*
H =	Clearance to each side of center line extended above meter/regulator assembly	*
I =	Clearance to service regulator vent outlet	*
J =	Clearance to non-mechanical air supply inlet to building or the combustion air inlet to any other appliance	6 in (15 cm) for appliances ≤ 10,000 Btu/h (3 kW), 9 in (23 cm) for appliances > 10,000 Btu/h (3 kW) and ≤ 50,000 Btu/h (15 kW), 12 in (30 cm) for appliances > 50,000 Btu/h (15 kW)
K =	Clearance to a mechanical air supply inlet	3 ft (91 cm) above if within 10 ft (3 m) horizontally
L =	Clearance above paved sidewalk or paved driveway located on public property †	*
M =	Clearance under veranda, porch deck, or balcony ¥	*
1	In accordance with the current ANSI Z223.1/NFPA 54, National Fuel Gas Code	
†	A vent shall not terminate directly above a sidewalk or paved driveway that is located between two single family dwellings and serves both dwellings.	
¥	Permitted only if veranda, porch, deck or balcony is fully open on a minimum of two sides beneath the floor.	
*	For clearances not specified in ANSI Z223.1/NFPA 54 or CSA B149.1, refer to local codes.	

VENTING REQUIREMENTS

⚠ WARNING

This fireplace must not be vented with any other appliances, even if that appliance is of the condensing type. Common venting can result in severe corrosion of other appliances or their venting and can allow combustion gases to escape through such appliances or vents. Do not vent the fireplace into a fireplace chimney or building chase.

⚠ WARNING

Upon completion of the installation, carefully inspect the entire flue system to assure it is properly sealed. DO NOT use any vent material other than what is specified in this manual. Leaks in the flue system can result in serious personal injury or death due to exposure of flue products, including carbon monoxide.

The Mantis is classified as a "Category IV" appliance, which requires special venting materials and installation procedures. Installations can be Conventional (1-pipe) and Direct Vent (2-pipe). Venting must be completed with 1-1/2 inch diameter pipe. In selecting a location for installation, it is necessary to provide adequate clearances for servicing and proper installation.
All vent and combustion air pipes and fittings must be Schedule 40 PVC and meet the ANSI/ASTM Standard D1785. Cement must conform to ASTM Standard D2564.

Maximum Vent Length is 40 feet with (3) 90° elbows. The minimum vent length is 12 inches. Each 90° elbow used in the vent system will be the equivalent to 3 feet, and each 45° elbow is equivalent to 1.5 feet, which should be added to the overall vent length. **See Table 1.**

It is recommended that the Mantis Power-Vent High-Efficiency Fireplace be located on an exterior wall for ease of venting. The flue exhaust pipe and inlet air pipe should be located between wall studs. The required opening for venting is 1-7/8 inch in diameter for 1-1/2 inch PVC pipe.

The minimum distance from the center of the vent cap to the nearest outside corner or obstruction is 12 inches. The flue outlet must be at least 12 inches from any opening which flue gases could enter the building. See Figure 1. The flue outlet must be a minimum distance of 6 feet from any pressure regulator.

The bottom of the exhaust vent terminal and the air intake shall be located at least 12 inches above grade and must be vented outside. It is recommended the exhaust and intake be located 12 inches from the maximum snow level.

The flue pipe must be supported on horizontal vent runs. The flue pipe needs to be supported every 3 feet. All horizontal runs of the flue must be pitched ¼ inch per foot either towards the fireplace or away from the fireplace.

Note: If the vent run dips or sags, condensation may become trapped and cause the unit to not operate properly.

The minimum vent length protruding from outside the wall is 6 inches. For two-pipe installation, a minimum distance of 3 inches and maximum distance of 24 inches must be maintained between the pipes. See Figures 2 and 3.

Single flue (one-pipe) installations must have a minimum clearance of 2 inches on the back of the fireplace for combustion air.

Note: If vent length requirements are not followed, the unit will not operate properly.

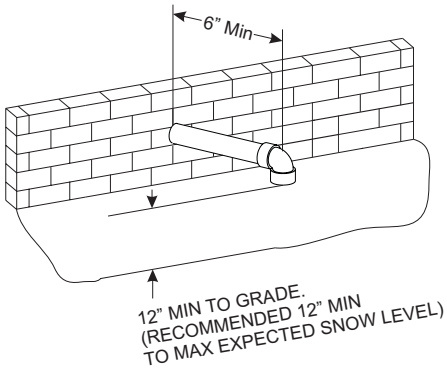


Figure 2 - Single Flue

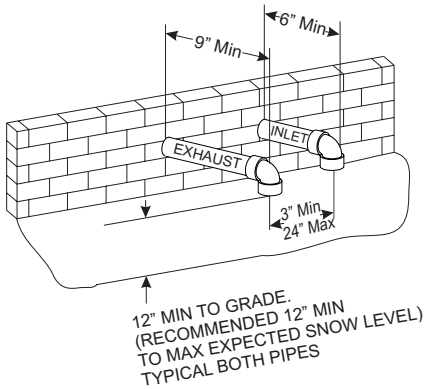


Figure 3 - Colinear Direct Vent

Table 1 - Equivalent Vent Length Example														
EVL = Equivalent Vent Length														
EVL must be greater than or equal to 1' **and** less than or equal to 40'														
EVL	=	90º elbow	+	4' straight pipe	+	45º elbow	+	2' straight pipe	+	45º elbow	+	3' straight pipe	=	15'
EVL	=	3' (90º elbow)	+	4' (straight pipe)	+	1.5' (45º elbow)	+	2' (straight pipe)	+	1.5' (45º elbow)	+	3' (straight pipe)	=	15'

VENTING REQUIREMENTS

Vent Freezing Protection

When the vent pipe is exposed to temperatures below freezing (i.e. when it passes through unheated spaces, chimneys, etc.) The pipe must be insulated with 1/2 inch thick sponge rubber insulation, Armaflex-type insulation or equivalent. Insulating pipe is important to avoid condensate icing.

For proper operation, the flue exhaust must extend 6 inches from the outside wall before applying an elbow.

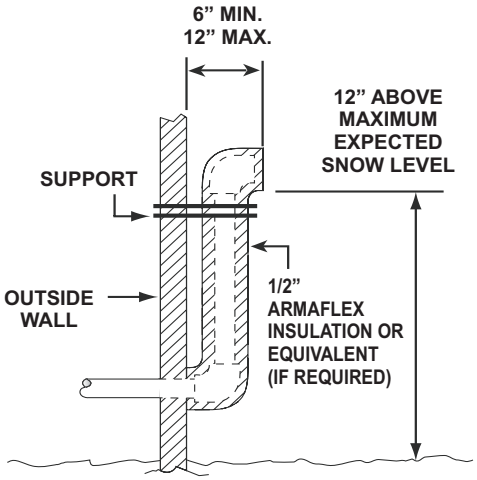


Figure 4

VENT ADAPTOR KITS

The Vent Adaptor Kits provide a transition from the fireplace to the flue and inlet pipes. The Single Flue Horizontal Vent Kit (PVVK-FC) provides a transition for the flue piping. No cement is required to attach the adaptor to the fireplace. When installing the flue piping, use the appropriate primer and cement to permanently bond the joints and pipes. Colinear Adaptor (part number PVCA) provides a transition for the inlet air. **See Page 16.**

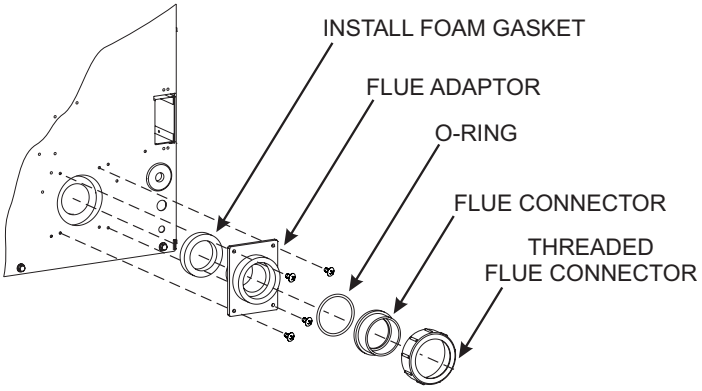


Figure 5

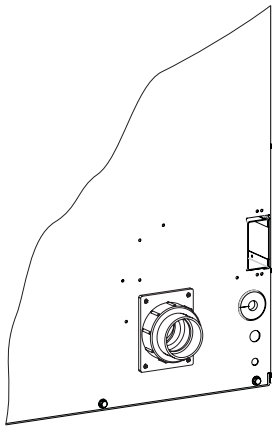
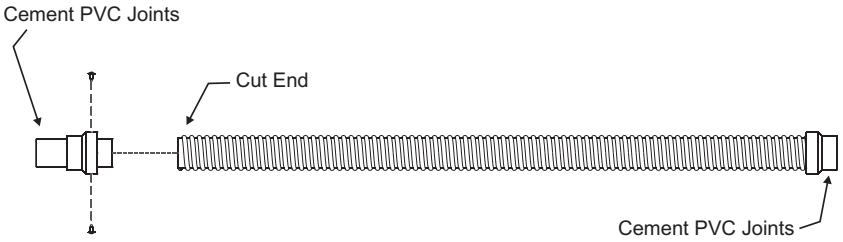


Figure 6

PVVK-CFA FLEX VENT KIT

Available from Empire Comfort Systems, Inc.

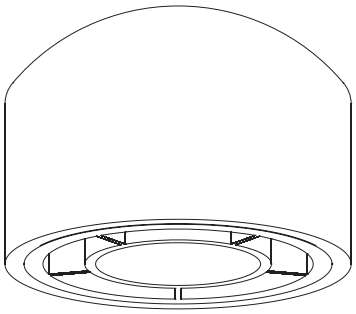
The PVVK-CFA Flex Vent Kit is a flexible vent hose that is 42" in length. The flex vent kit will be used when installing a Mantis into an existing fireplace. The flex vent kit can be cut down, but can only be cut from one end.



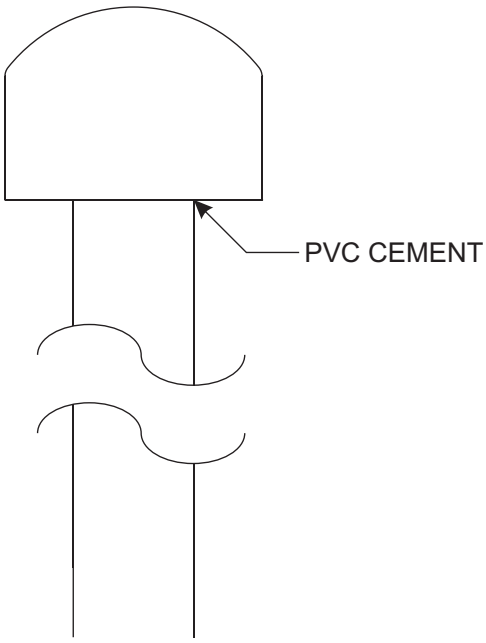
Once length is determined, install two (2) 10 x 1/2" screws into the adaptor assembly to secure the adaptor assembly to the flex hose. Using PVC cement, cement all PVC joints of the flex vent kit to the remaining PVC vent run.

PVVTC TERMINATION CAP VENT KIT

Available from Empire Comfort Systems, Inc.



Termination Cap



PVVTC Vertical exhaust cap used with 1 1/2” PVC pipe installation.
Termination cap can also be used with colinear transition plate model PVCT.
Refer to Figures 10-13, 15, 19 and 20 for venting examples.

VENT EXAMPLES FOR SINGLE FLUE

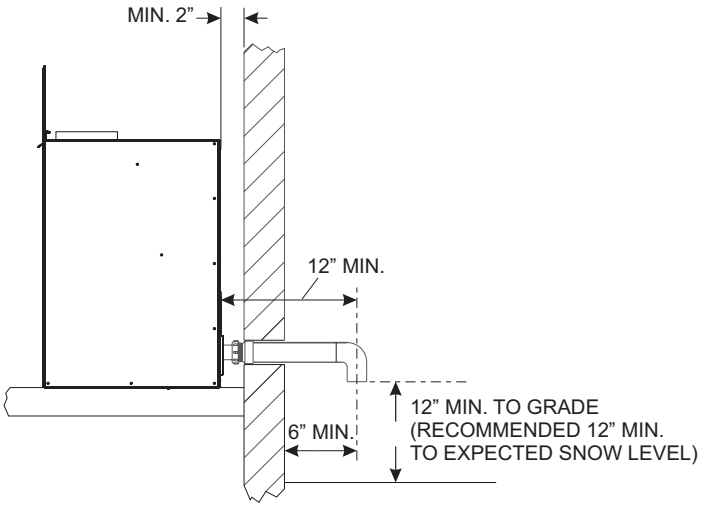


Figure 7
Single Flue - Straight Out Back
Min 6” Outside Wall
Min 2” From Fireplace to Wall for Intake Air
Min vent length 12”

Figure 8 displays a single flue (one-pipe) installation. Because the distance from the fireplace to the first elbow is more than 6 inches, the first 90° elbow must be considered into the total vent length. The equivalent length of the second 90° elbow also needs to be added to the total length, but the third elbow does not since it is the flue terminal. The total horizontal vent length of the flue system is 7 feet, and the total vertical length is 27 feet. The two 90° elbows are equivalent to 6 feet, bringing the total to 40 feet.

Figure 9 is an example of how the fireplace can be vented if the flue outlet is below the level of the floor.

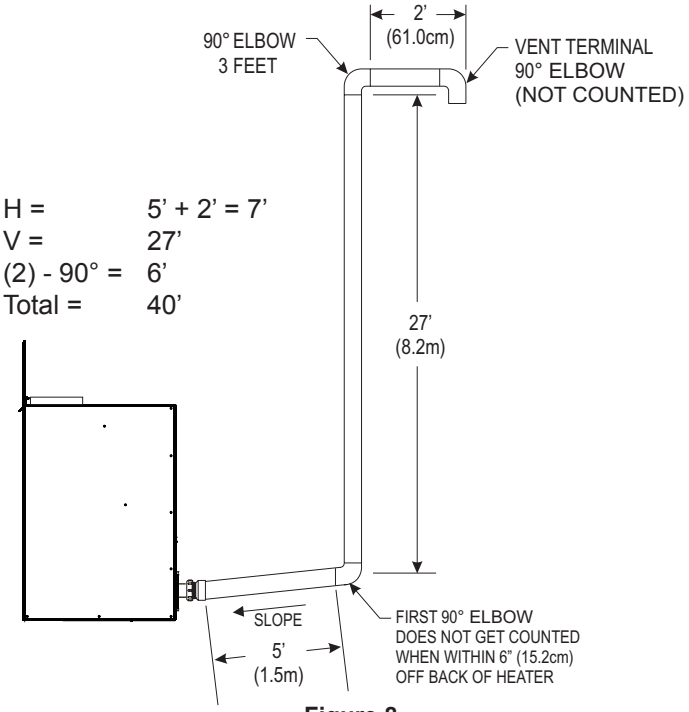


Figure 8
Single Flue - Horizontal Tall Vent Run
Example Calculation Max Vent Run 40 feet

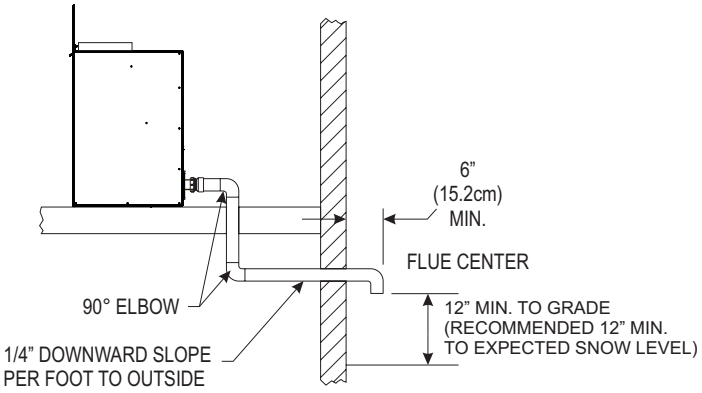


Figure 9
Minimum Exterior Grade Dimension - Single Flue, Horizontal Venting Below Floor

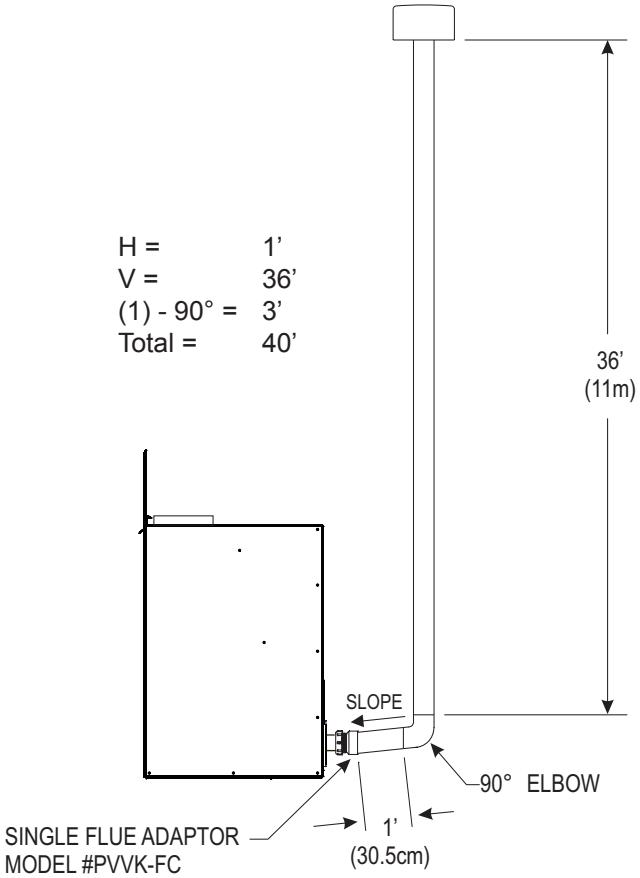


Figure 10
Single Flue - Vertical Vent Run

VENT EXAMPLES FOR SINGLE FLUE

Determining Minimum Vent Height Above the Roof

⚠ WARNING

Major U.S. building codes specify minimum chimney and/or vent height above the rooftop. These minimum heights are necessary in the interest of safety. These specifications are summarized in Figures 11 and 12.

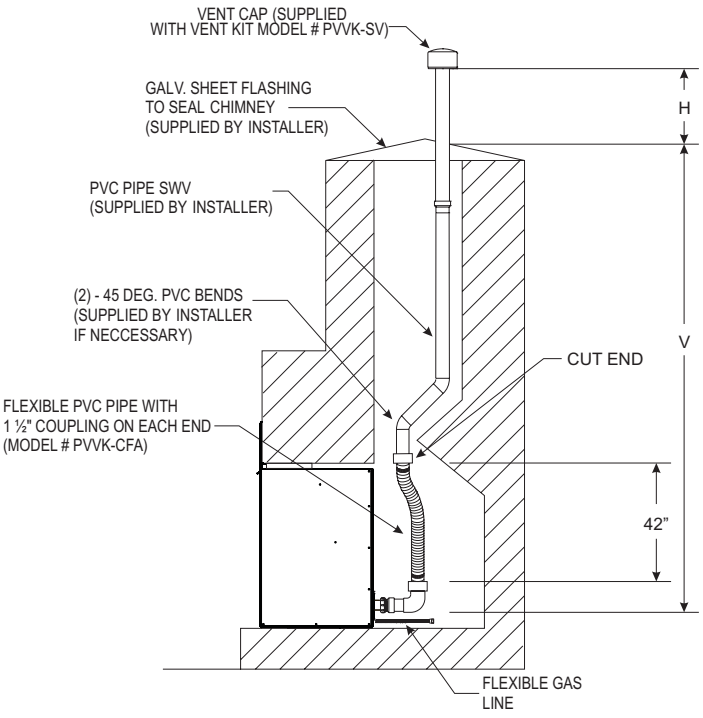
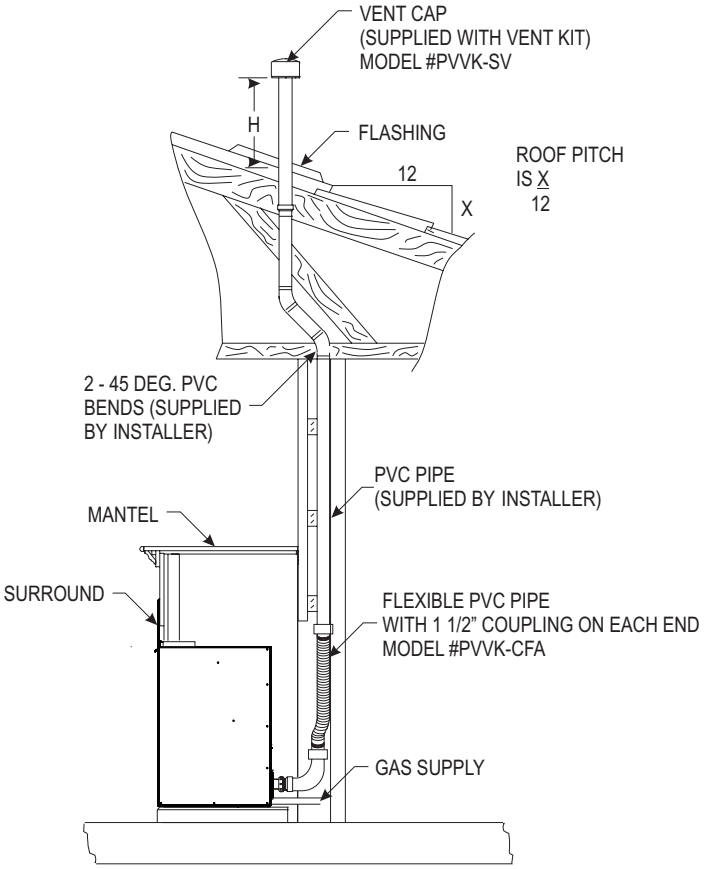


Figure 11 - Venting for Existing Fireplace Installation



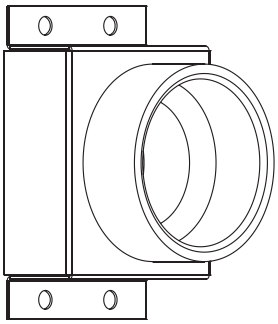
Determining Minimum Vent Height Above the Roof

ROOF PITCH	H (Min.)
Flat to 6/12	12” (305 mm)
6/12 to 7/12	15” (381 mm)
Over 7/12 to 8/12	18” (457 mm)
Over 8/12 to 16/12	24” (610 mm)
Over 16/12 to 21/12	36” (914 mm)

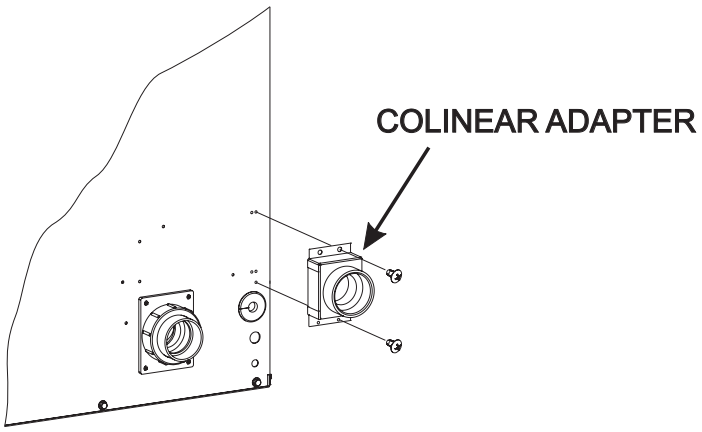
Figure 12
Single Flue - Vertical Vent Run with 45 degree elbows

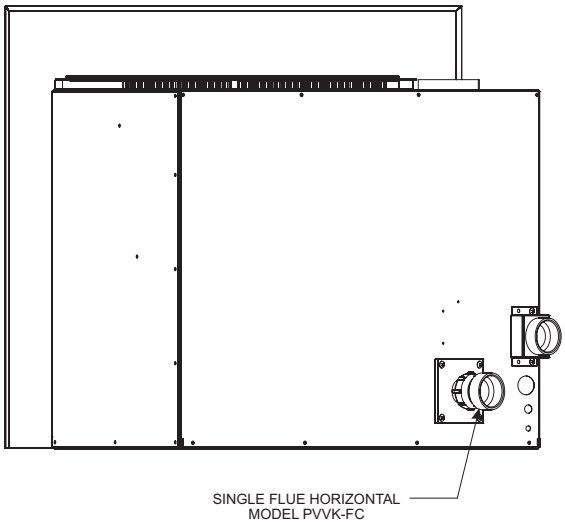
PVCA HORIZONTAL COLINEAR DIRECT VENT ADAPTOR

Colinear adaptor to be used in conjunction with single flue horizontal vent kit PVVK-FC. The two attachments are used for colinear direct vent installation.

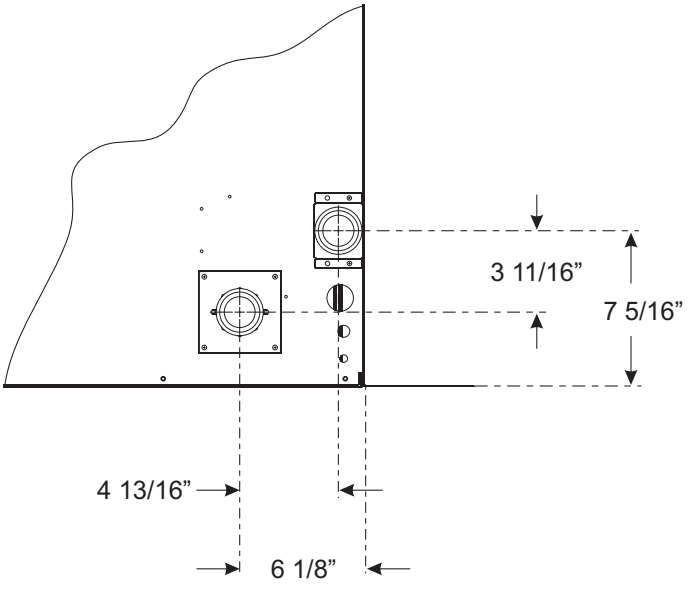


Colinear adaptor



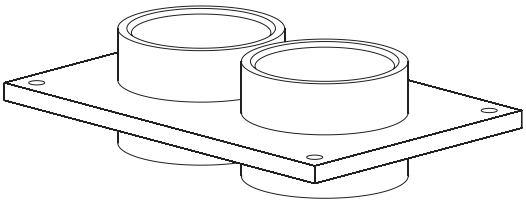


1. Attach colinear adaptor to back of fireplace with two (2) screws.
2. When adapter is connected, continue with your vent run. Cementing PVC joint is recommended, but not required on colinear fresh air intake adaptor.



COLINEAR TRANSITION VENT KIT

Available from Empire Comfort Systems, Inc.



Colinear Transition Plate

The Colinear Transition Kit (Part number PVCT) is available and can be used to secure the flue and inlet pipes from the Mantis. When venting vertically, the exhaust pipe termination must be a minimum of 3 inches above the air inlet.

The flue can be terminated with a PTrap or two 90° elbows. The Vertical Termination Cap (Part number PVVTC) can also be used to terminate the flue pipe when using the Colinear Transition Kit.

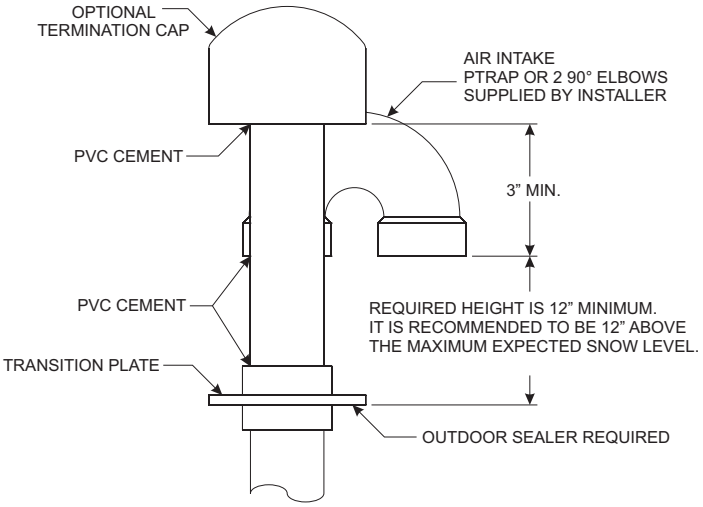


Figure 13

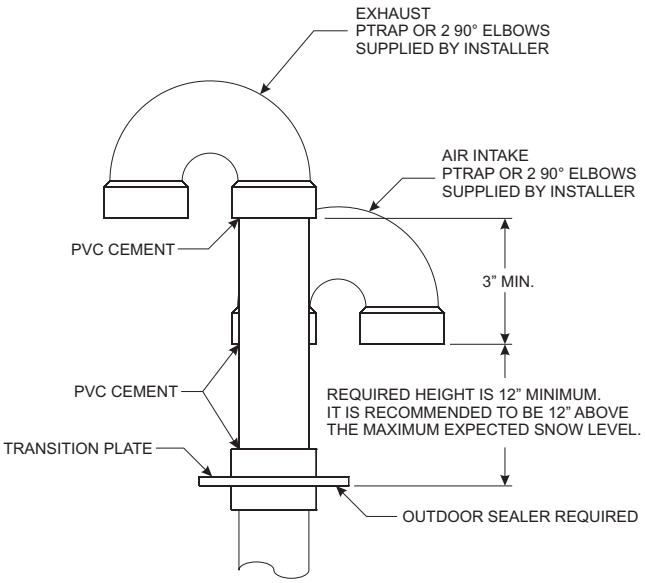
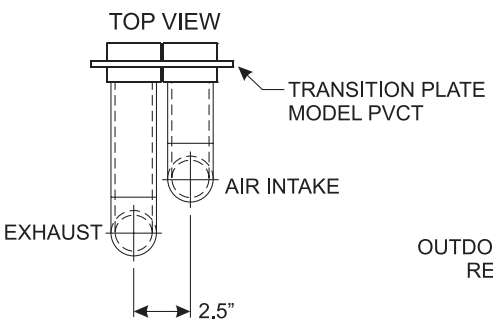
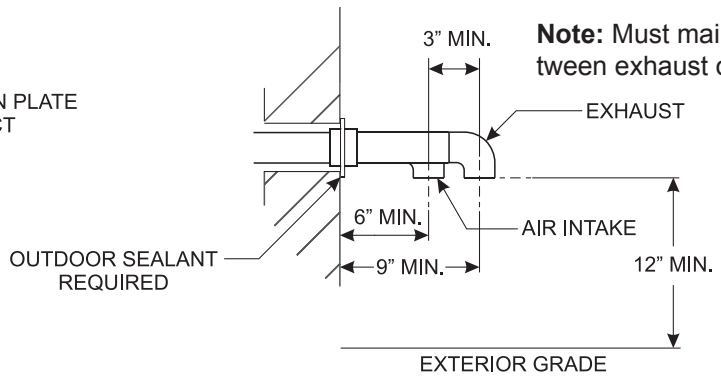


Figure 14

Installation of the Colinear Transition Plate

1. Attach the plate to chimney chase, flat roof, or outside wall with four (4) screws. Use outdoor sealant to seal the transition plate to the surface.
2. Cut inlet air pipe and flue exhaust pipe to correct lengths. For vertical terminations through the roof or chimney, the air intake and exhaust pipe termination must be a minimum of 12 inches above the roof line. It is recommended that the air intake and exhaust pipe termination be 12 inches above the maximum expected snow level. See Figures 13 and 14. When venting vertically, the exhaust pipe termination must be a minimum of 3 inches above the air intake. Also refer to local codes. For horizontal termination through outside walls, the minimum pipe length is 9 inches for exhaust pipe termination and 6 inches for the air intake.
3. Attach the flue and inlet air pipes to the transition plate. Use the appropriate primer and cement to permanently bond the joints and the pipes to the transition plate.





Note: Must maintain a minimum 3" between exhaust outlet and air intake.

DIRECT VENT COLINEAR VENT EXAMPLES

Max Vent Run - 40 ft. Equivalent With Three (3) 90° Elbows

Special Note: The vent terminal 90° elbow and first 90° elbow off back of the fireplace, when within 6" (15.2 cm), do not contribute to the overall vent length measurement. For each 45° elbow installed in the horizontal run, the length of the horizontal run MUST be reduced by 1.5 feet (45 cm). This does not apply if the 45° elbows are installed on the vertical part of the vent system. Reduce the length of the horizontal run 3 feet (91.4 cm) for every 90° elbow.

Note: Exhaust must be a minimum of 3 inches above air intake inlet.

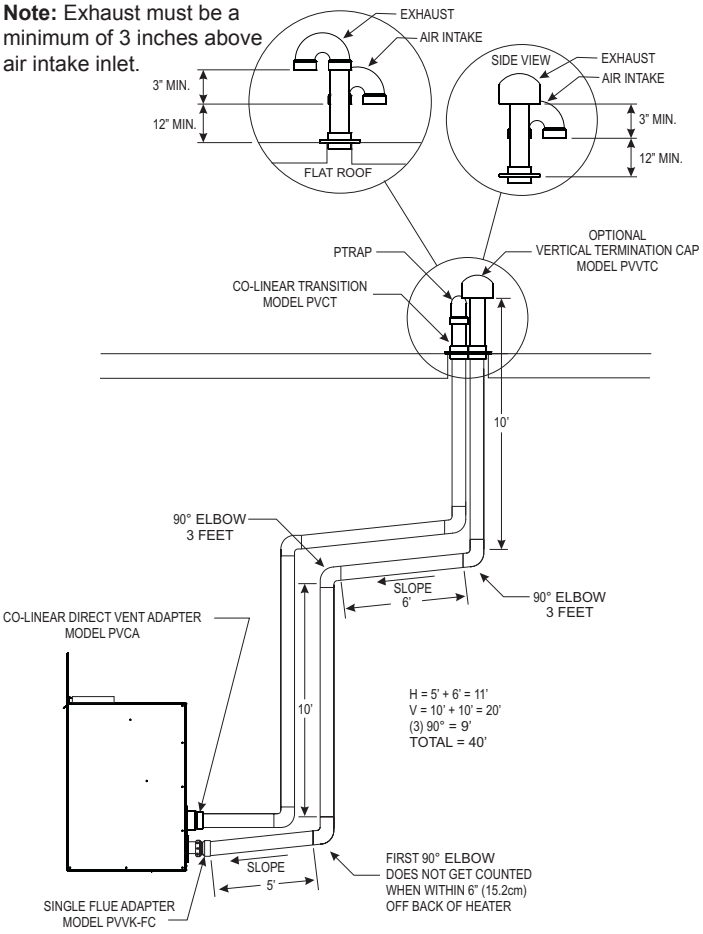


Figure 15
Calculation example of vent run maximum 40 feet

Figure 15 displays a two-pipe installation. Because the distance from the fireplace to the first elbow is more than 6 inches, the equivalent length allowance for the first 90° elbow must be added to the total vent length. The equivalent length of the second 90° elbow also needs to be added to the total length. The third elbow also needs to be included. The equivalent length of the PTrap does not need to be added since it is the termination. The total horizontal vent length of the flue system is 11 feet, and the total vertical length is 20 feet. The three 90° elbows are equivalent to 9 feet, bringing the total to 40 feet.

Note: The exhaust must be a minimum of 3 inches above the inlet air pipe. The flue must be at least 12 inches from the roof line, and it is recommended to be at least 12 inches above the maximum expected snow level as indicated in Figures 7, 9, 13, 14, 16 and 20.

Note: On horizontal runs, a P.V.C. support clamp needs to be installed every 3 feet. Do not allow "sags" in horizontal vent runs; water will settle in the pipe.

When installing a colinear horizontal, the minimum vent length protruding from the outside wall is 6" (15.2 cm) for air intake and 9" for exhaust. See Figure 16.

Note: Horizontal discharge 90° elbow must be pointed downward. See Figure 16. All horizontal runs require either a 1/4" per foot rise to run condensation back to the fireplace, or a 1/4" per foot downward slope to run condensation away from the fireplace.

Note: All PVC vent run piping can be purchased at a local hardware store. Schedule 40 PVC pipe should be used and cemented. PVCA Horizontal Colinear Direct Vent Adaptor, PVVTC Cap, PVVK-CFA Flex Kit and PVVK-SH Horizontal Vent Adaptor Kit are available from Empire Comfort Systems, Inc.

In both vertical and horizontal colinear direct vent applications, a colinear transition plate model PVCT can be used to minimize clearances between intake and exhaust pipes.

For horizontal colinear direct venting, exhaust and intake air, cap pipes with 90º elbows, pointed downward.

Note: If transition plate (model PVCT) is used, the measurement for center to center of the pipes will be 2.5". If the transition plate (model PVCT) is not used, the measurement for center to center of the pipes can be 3" to 24" maximum.

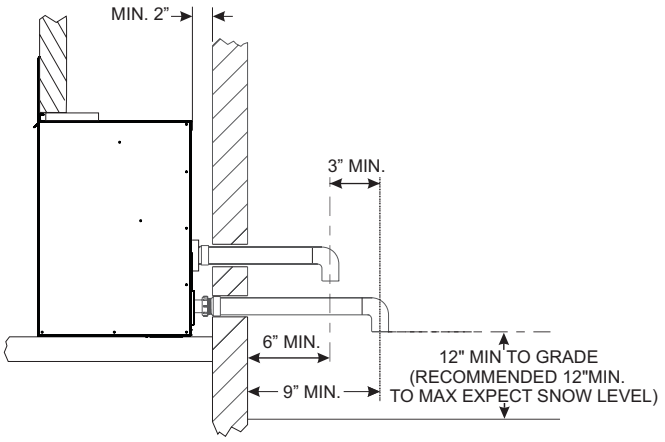


Figure 16

DIRECT VENT COLINEAR VENT EXAMPLES

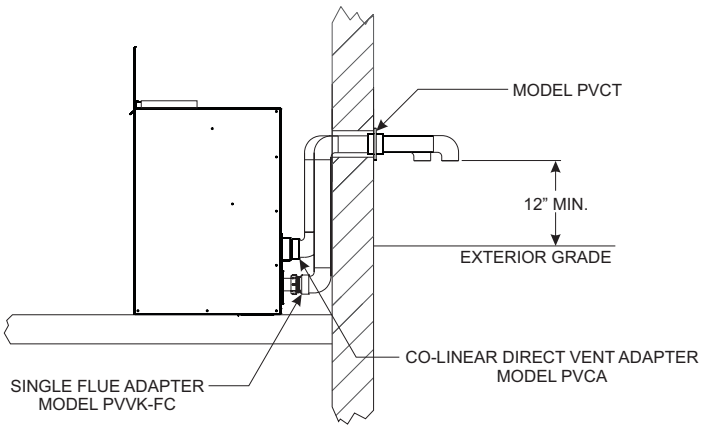


Figure 17

In direct vent applications, the minimum distance between the two pipes is 3 inches and the maximum distance is 24 inches. The flue exhaust and air inlet can be terminated with either a PTrap or two 90° elbows as shown in Figures 13, 14, 15, 19 and 20. The Vertical Termination Cap shown on page 13 (Part number PVVTC) can also be used.

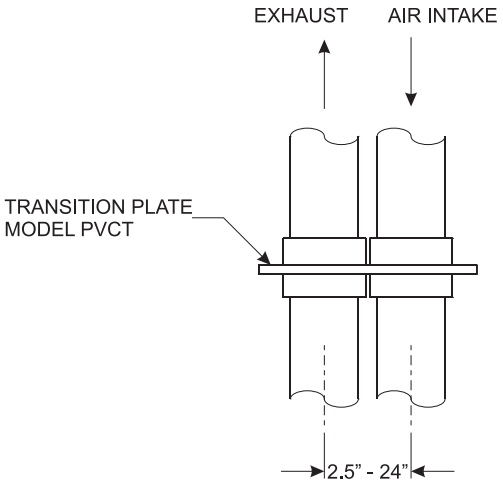


Figure 18

In both vertical and horizontal colinear direct vent applications, a colinear transition plate model PVCT can be used to minimize clearances between intake and exhaust pipes.

For exhaust and intake air, cap pipes with any of the following: Vertical termination cap (model #PVVTC), PTrap, or two 90º elbows. When transition plate (model PVCT) is used, two termination caps (model PVVTC) may NOT be used.

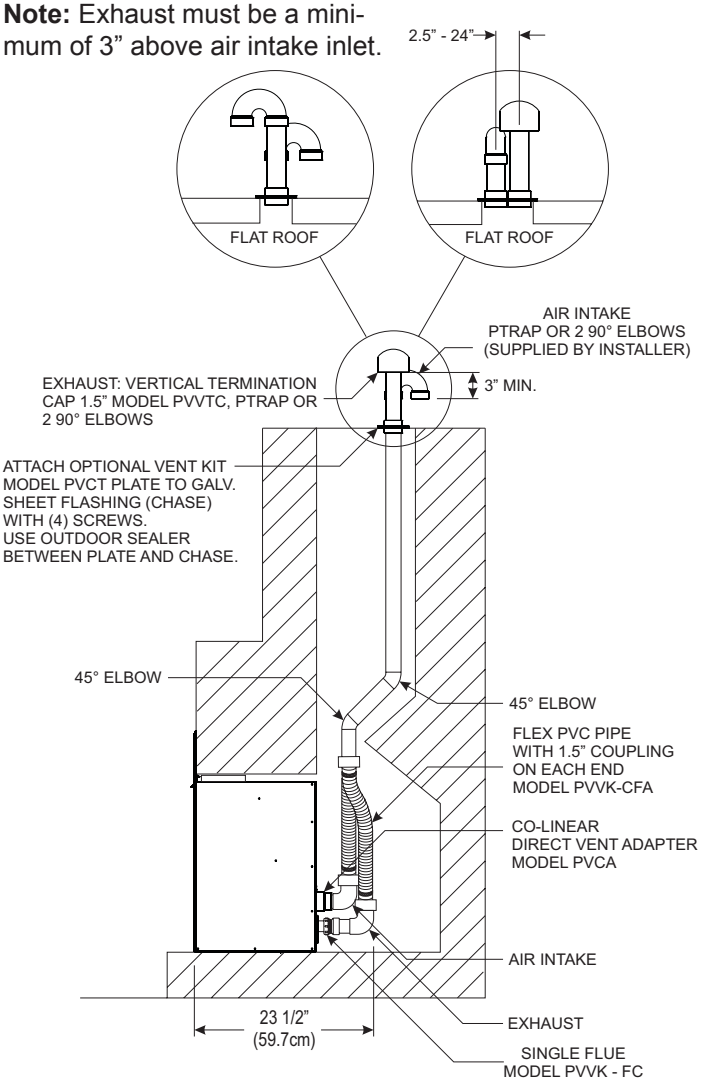
Note: If transition plate (model PVCT) is used, the measurement for center to center of the pipes will be 2.5". If the transition plate (model PVCT) is not used, the measurement for center to center of the pipes can be 3" to 24" maximum.

DIRECT VENT COLINEAR VENT EXAMPLES

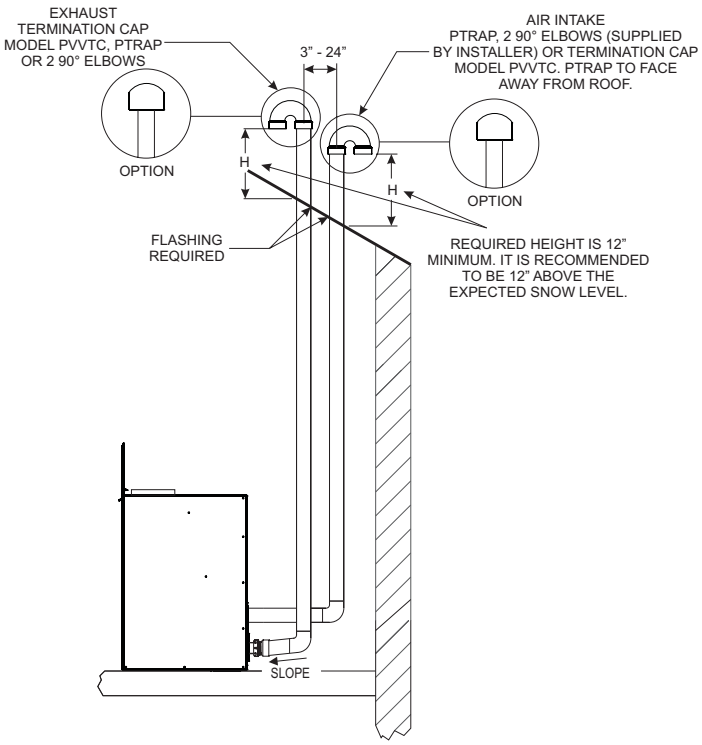
⚠ WARNING

Major U.S. building codes specify minimum chimney and/or vent height above the rooftop. These minimum heights are necessary in the interest of safety. These specifications are summarized in Figures 19 and 20.

Note: Exhaust must be a minimum of 3” above air intake inlet.



Colinear Direct Vent - Insert Installation
Figure 19



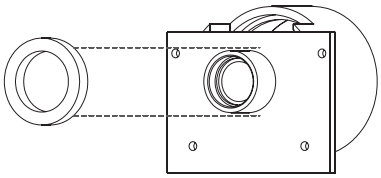
Determining Minimum Vent Height Above the Roof

ROOF PITCH	H (Min.)
Flat to 6/12	12” (305 mm)
6/12 to 7/12	15” (381 mm)
Over 7/12 to 8/12	18” (457 mm)
Over 8/12 to 16/12	24” (610 mm)
Over 16/12 to 21/12	36” (914 mm)

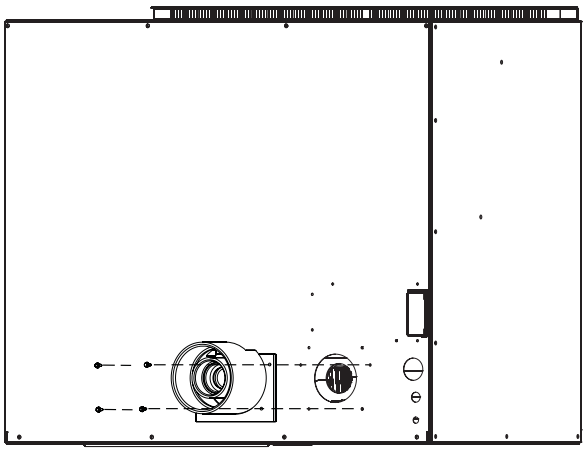
Colinear Direct Vent - Pitched Roof Installation
Figure 20

PVVK-24H AND PVVK-48H CO-AXIAL VENT KIT

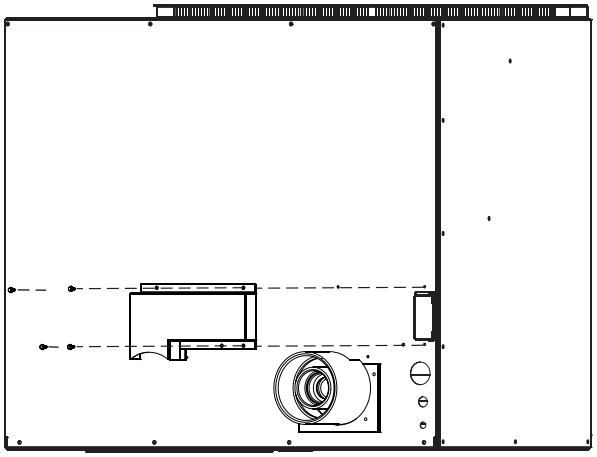
Available from Empire Comfort Systems, Inc.



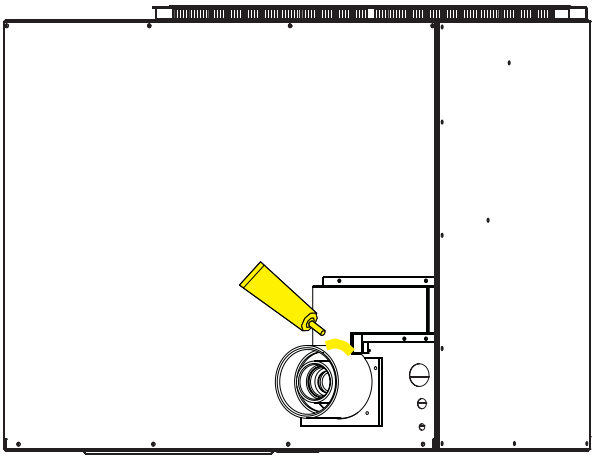
Step 1. Install foam gasket on back side of co-axial direct vent adaptor.



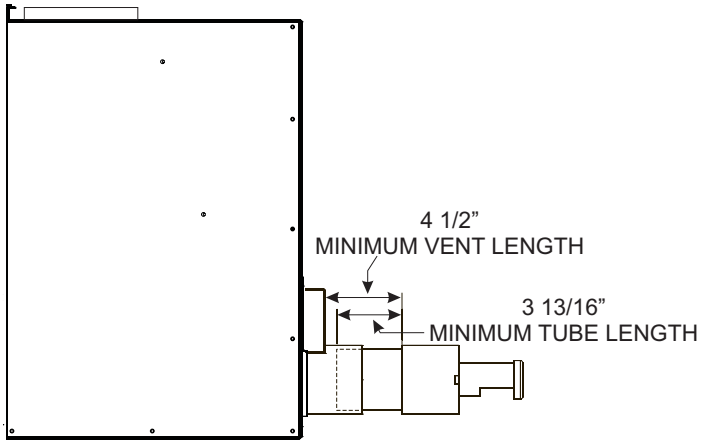
Step 2. Attach co-axial direct vent adaptor and gasket (4 screws) to the rear of fireplace.



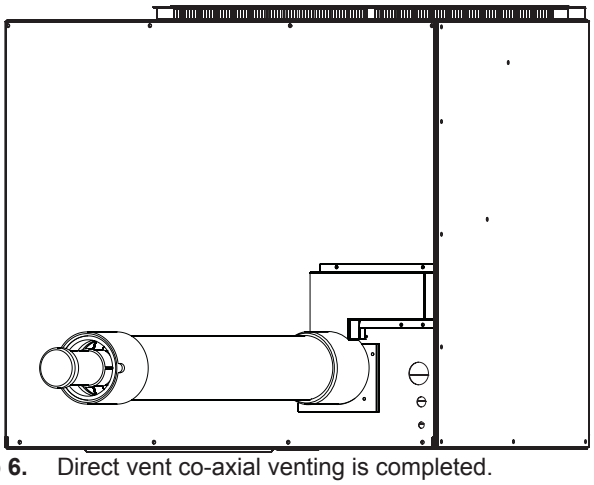
Step 3. Attach co-axial air-inlet duct to rear of fireplace (6 screws).



Step 4. Install silicone around connection between co-axial adaptor and co-axial air-inlet duct.

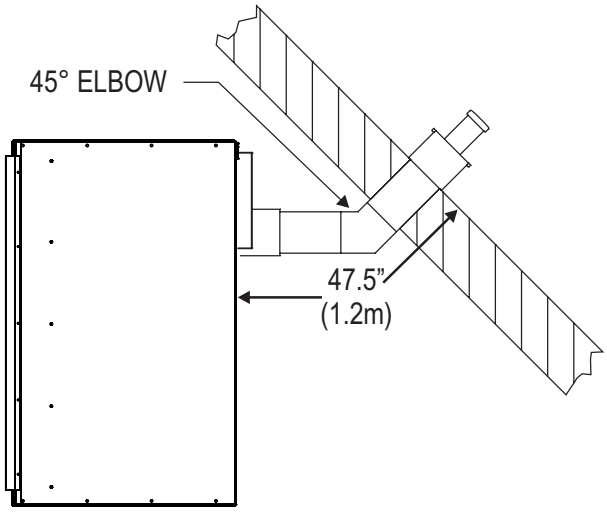


Step 5. Slide co-axial vent pipes into co-axial adaptor. Cut the PVC co-axial pipes at this time.
Minimum horizontal vent length 4 1/2” (11.4 cm)
Minimum tube length 3 13/16” (9.7 cm)



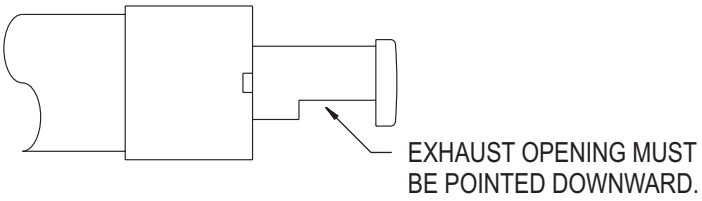
Step 6. Direct vent co-axial venting is completed.

PVVK-24H AND PVVK-48H CO-AXIAL VENT KIT (cont.)



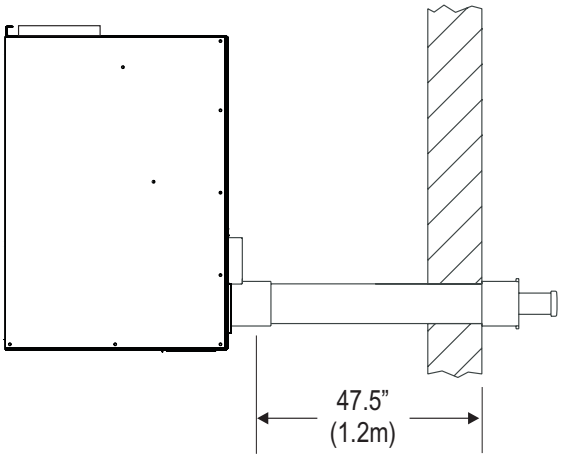
Horizontal Venting Maximum 47.5” (1.2 m) with 45° elbows. Inner 1-1/2 inch pipe and outer 3 inch pipe 45° elbows can be purchased from a local hardware store.

Figure 21



Direct Vent System Building Exterior View

Figure 22



Maximum Horizontal Venting - 47 1/2” (1.2 m)
Minimum Horizontal Venting - 4” (10.2 cm)

Figure 23

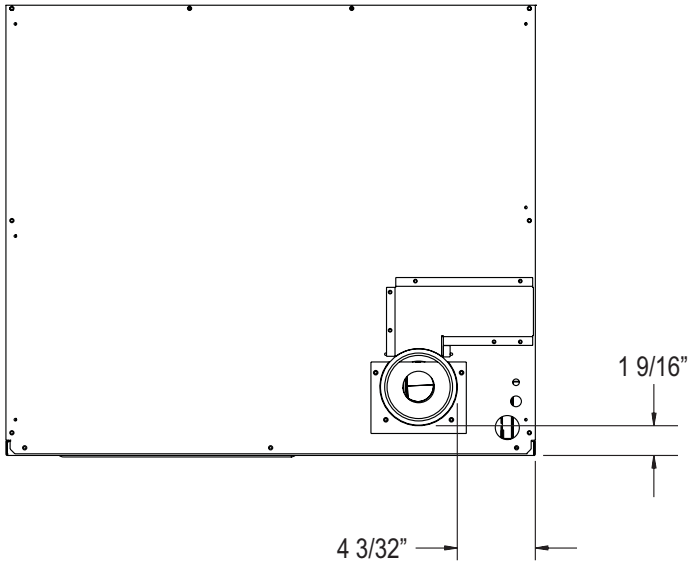


Figure 24

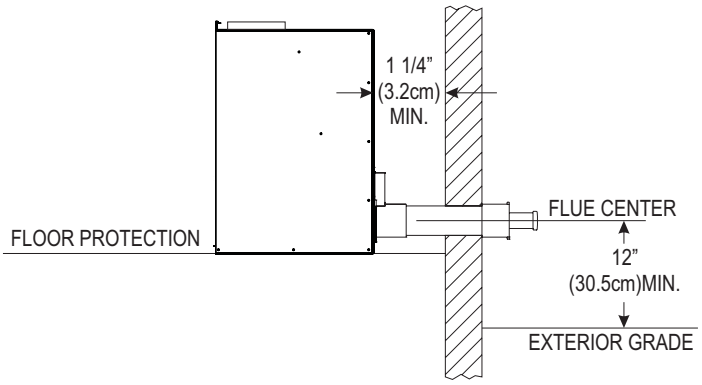


Figure 25
Minimum Exterior Grade Dimension

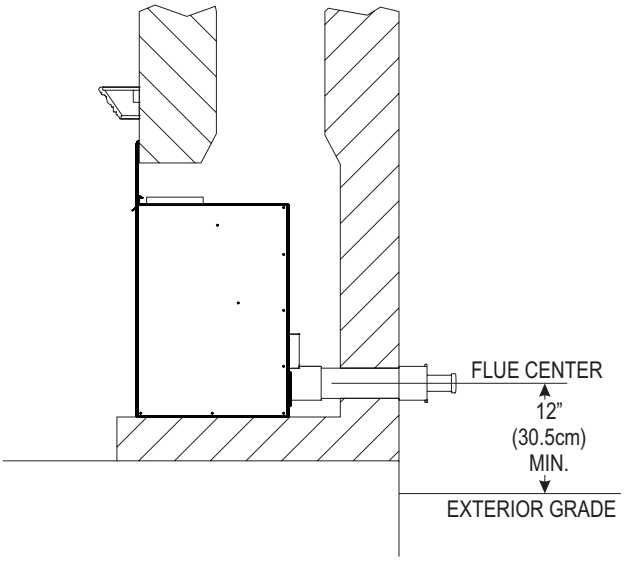


Figure 26
Minimum Exterior Grade Dimension - Existing Fireplace Installation

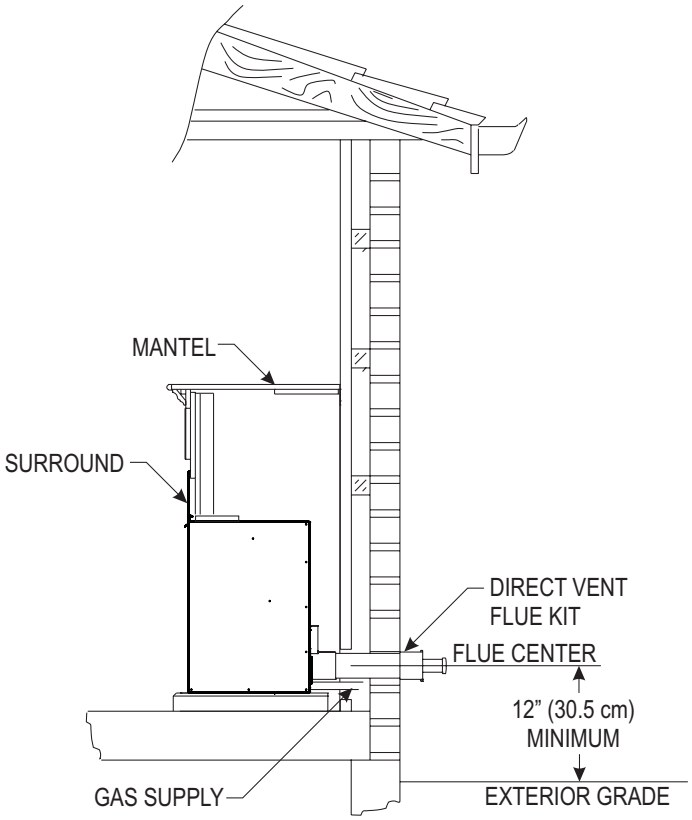


Figure 27
Horizontal Venting

ROUGH FRAMING DIMENSIONS

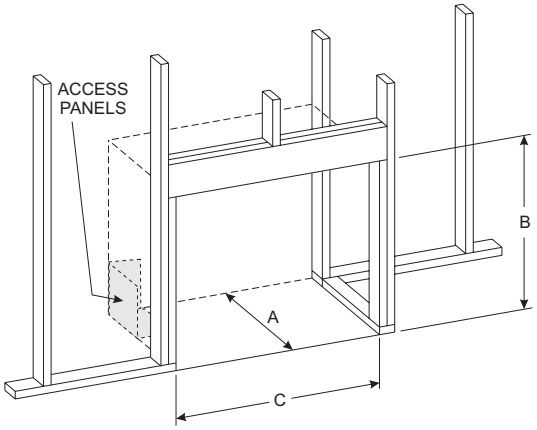


Figure 28

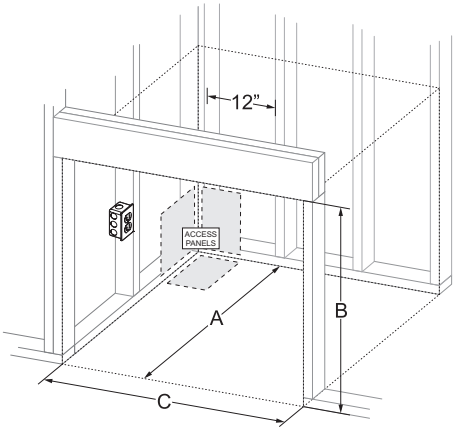


Figure 29

		Single Vent	Direct Vent and Colinear Vent	Co-axial Vent	Flex Vent
Bay Window Mantis with PV-4H Short Top Cover Kit	A	8-1/2" minimum*	8-1/2" minimum*	7-3/4" minimum	12-3/4" minimum
	B	25-1/4" minimum 27" maximum when using PVE-1 or PVE-2 Surround Kits			
	C	28-1/2" minimum, 33" minimum recommended for service 34-1/2" maximum when using PVE-1 Surround Kit 37" maximum when using PVE-2 Surround Kit			

* When using a 90° elbow on the flue exhaust.

		Single Vent	Direct Vent and Colinear Vent	Co-axial Vent	Flex Vent
Bay Window Mantis with PV-2H Slim Top Cover Kit	A	13-1/2" minimum*	13-1/2" minimum*	12-5/8" minimum	17-7/8" minimum
	B	25-1/4" minimum 27" maximum when using PVE-1 or PVE-2 Surround Kits			
	C	28-1/2" minimum, 33" minimum recommended for service 34-1/2" maximum when using PVE-1 Surround Kit 37" maximum when using PVE-2 Surround Kit			

* When using a 90° elbow on the flue exhaust.

		Single Vent	Direct Vent and Colinear Vent	Co-axial Vent	Flex Vent
Fireplace Mantis	A	19-1/2" minimum*	19-1/2" minimum*	18-1/2" minimum	23-3/4" minimum
	B	25" minimum 27-3/4" maximum when using FGK28 Surround Kit 28-1/2" maximum when using FFK28 Surround Kit 29-1/2" maximum when using FIK28 Surround Kit 32" maximum when using FWK28 Surround Kit			
	C	28-1/2" minimum, 31" recommended for service 33" maximum when using FGK28 Surround Kit 34" maximum when using FFK28 Surround Kit 37" maximum when using FIK28 Surround Kit 34" maximum when using FWK28 Surround Kit			

* When using a 90° elbow on the flue exhaust.

INSERT INTO MASONRY FIREPLACE

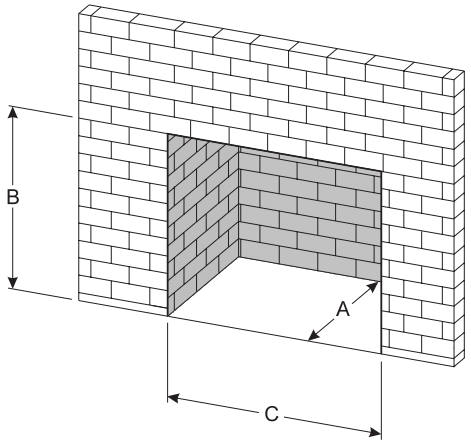


Figure 30

		Single Vent	Direct Vent and Colinear Vent	Flex Vent
Bay Window Mantis with PV-4H Short Top Cover Kit	A	8-1/2” minimum*	8-1/2” minimum*	12-3/4” minimum
	B	25-1/4” minimum 27” maximum when using PVE-1 or PVE-2 Surround Kits		
	C	28-1/2” minimum, 33” minimum recommended for service 34-1/2” maximum when using PVE-1 Surround Kit 37” maximum when using PVE-2 Surround Kit		

* When using a 90° elbow on the flue exhaust.

		Single Vent	Direct Vent and Colinear Vent	Flex Vent
Bay Window Mantis with PV-4H Slim Top Cover Kit	A	13-1/2” minimum*	13-1/2” minimum*	17-7/8” minimum
	B	25-1/4” minimum 27” maximum when using PVE-1 or PVE-2 Surround Kits		
	C	28-1/2” minimum, 33” minimum recommended for service 34-1/2” maximum when using PVE-1 Surround Kit 37” maximum when using PVE-2 Surround Kit		

* When using a 90° elbow on the flue exhaust.

		Single Vent	Direct Vent and Colinear Vent	Flex Vent
Fireplace Mantis	A	19-1/2” minimum*	19-1/2” minimum*	23-3/4” minimum
	B	25” minimum 27-3/4” maximum when using FGK28 Surround Kit 28-1/2” maximum when using FFK28 Surround Kit 29-1/2” maximum when using FIK28 Surround Kit 32” maximum when using FWK28 Surround Kit		
	C	28-1/2” minimum, 31” recommended for service 33” maximum when using FGK28 Surround Kit 34” maximum when using FFK28 Surround Kit 37” maximum when using FIK28 Surround Kit 34” maximum when using FWK28 Surround Kit		

* When using a 90° elbow on the flue exhaust.

BAY WINDOW MANTIS CLEARANCE TO COMBUSTIBLES

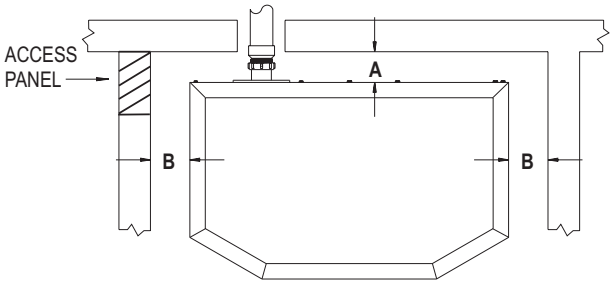


Figure 31

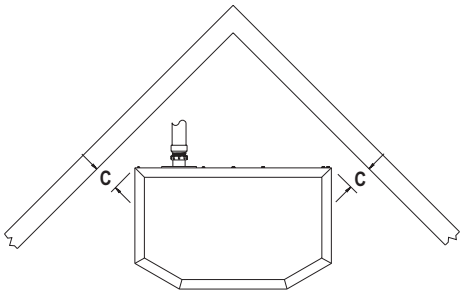
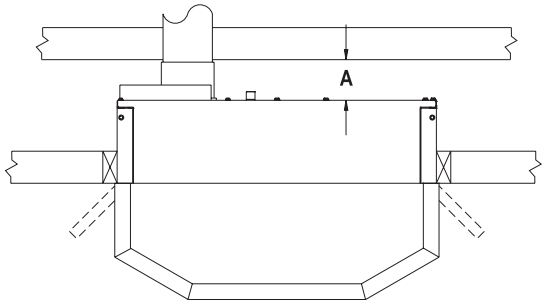
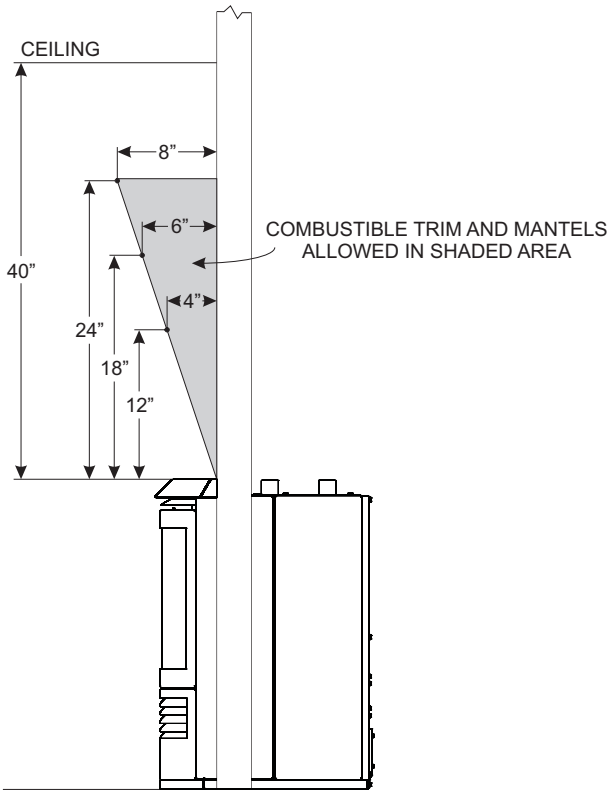


Figure 32

Freestanding Clearances		
A	Rear Wall to Fireplace	2” (1-1/4” for co-axial venting)
B	Side Wall to Fireplace	0” (4” recommended for door clearance)
C	Corner Installation	0”



Co-axial Venting Installation Shown
Single Flue requires surround for combustion air.
Figure 33



Mantel and Ceiling Clearances
Figure 34

Note: The Mantis Power-Vent High-Efficiency Fireplace has been tested and approved for zero clearance to combustible materials. It is recommended that clearances as listed above should be maintained to allow for removal of the product for servicing.

FIREPLACE MANTIS CLEARANCE TO COMBUSTIBLES

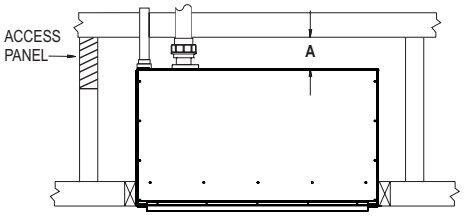


Figure 35

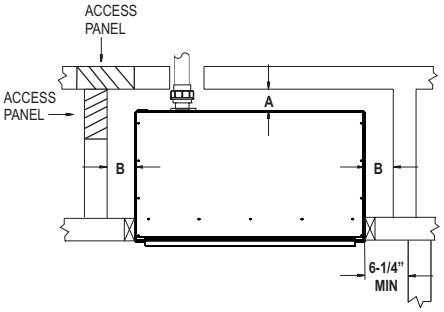


Figure 36

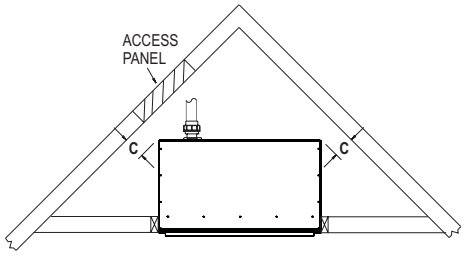
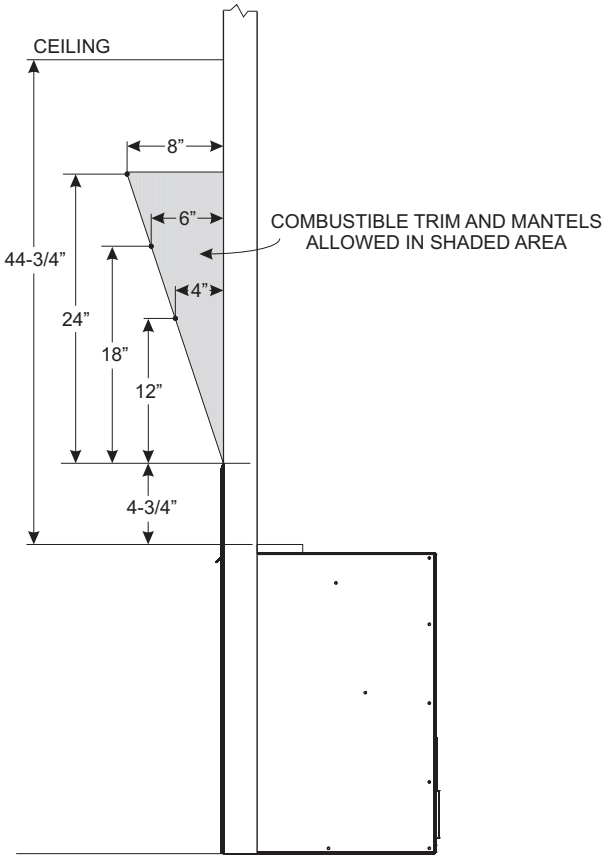


Figure 37

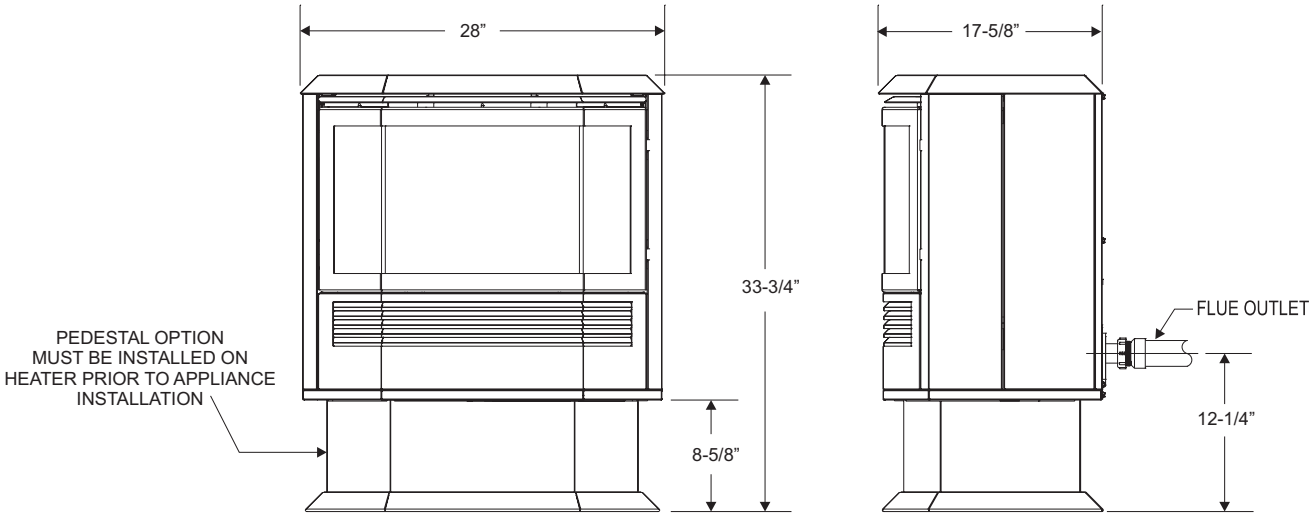
Insert Clearances		
A	Rear Wall to Fireplace	2” (1-1/4” for co-axial venting)
B	Side Wall to Fireplace	0”
C	Corner Installation	0”



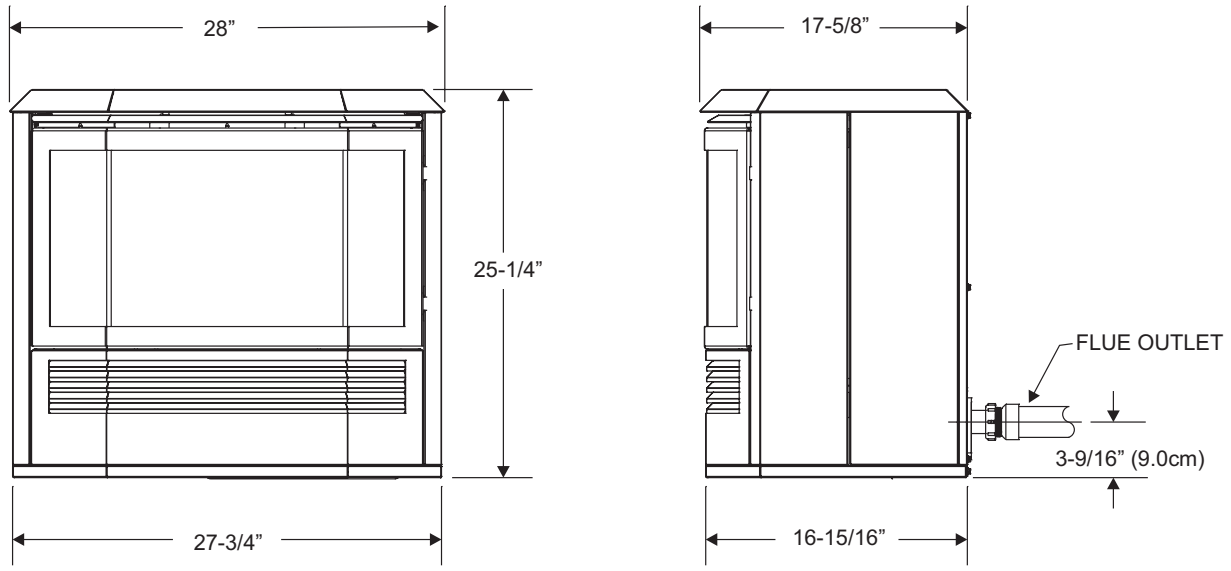
Mantel and Ceiling Clearances
Figure 38

Note: The Mantis Power-Vent High-Efficiency Fireplace has been tested and approved for zero clearance to combustible materials. It is recommended that clearances as listed above should be maintained to allow for removal of the product for servicing.

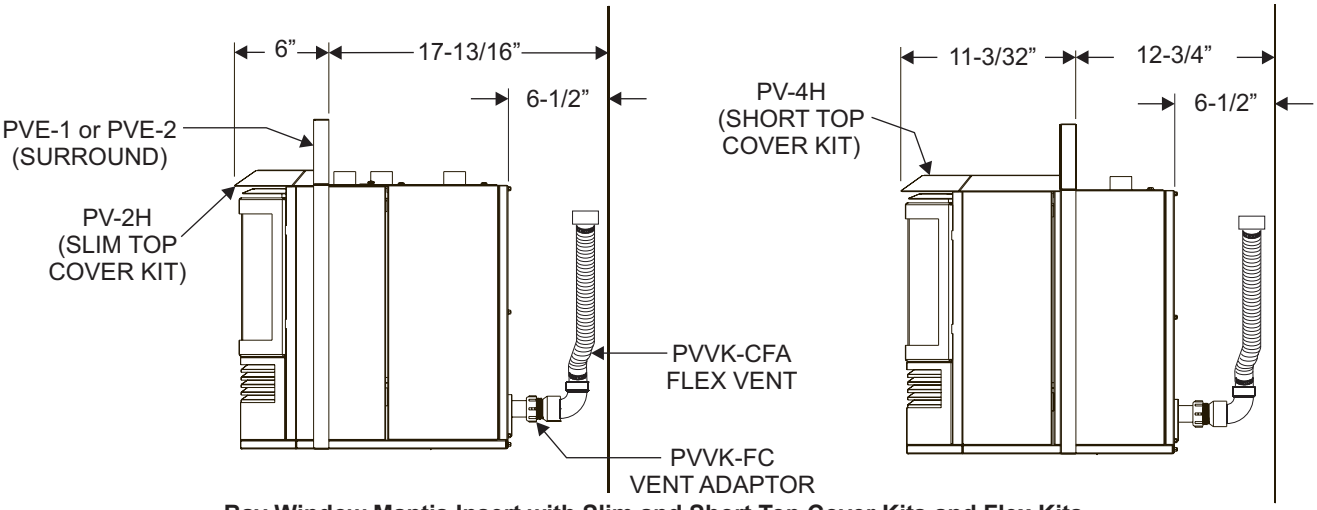
BAY WINDOW MANTIS SPECIFICATIONS



Bay Window Mantis with Pedestal and Single Flue Adaptor
Figure 39

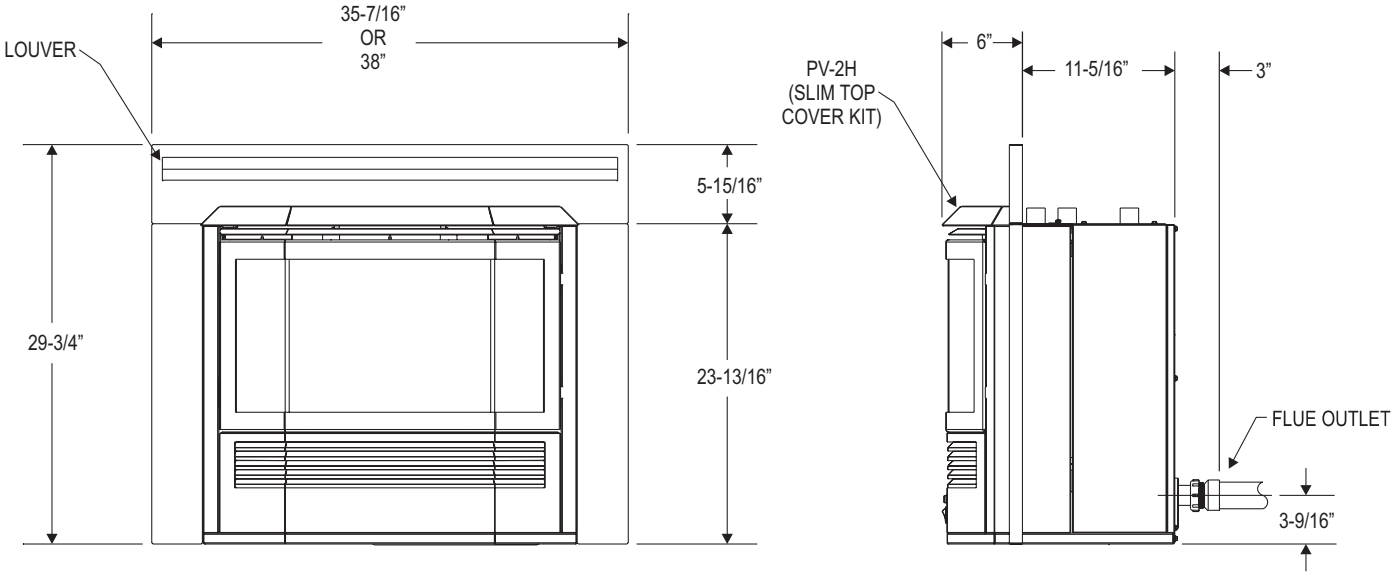


Bay Window Mantis without pedestal
Figure 40

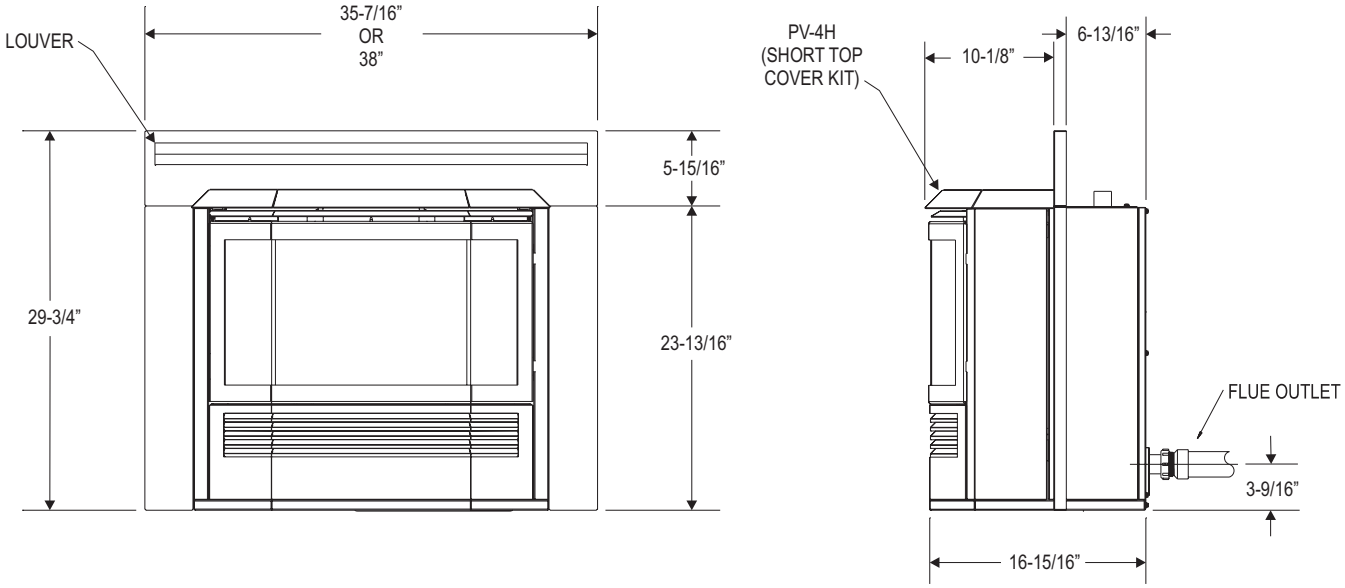


Bay Window Mantis Insert with Slim and Short Top Cover Kits and Flex Kits.
Figure 41

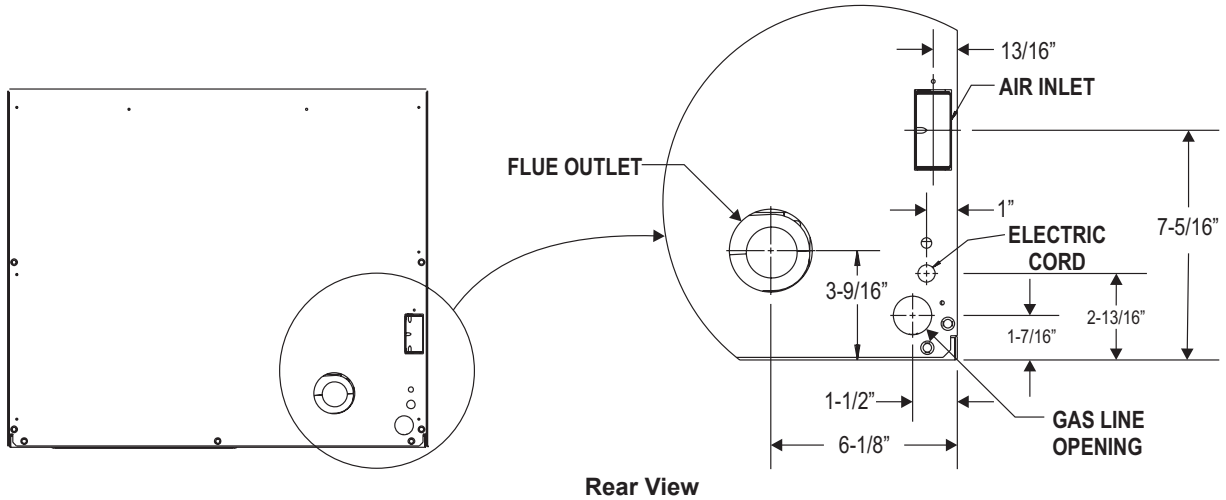
BAY WINDOW MANTIS SPECIFICATIONS - (continued)



Bay Window Mantis Fireplace with PVE-1 Mantel Surround with PV-2H Slim Top Cover Kit
Figure 42



Bay Window Mantis Fireplace with PVE-1 Mantel Surround with PV-4H Short Top Cover Kit
Figure 43



Rear View
Figure 44

FIREPLACE MANTIS SPECIFICATIONS

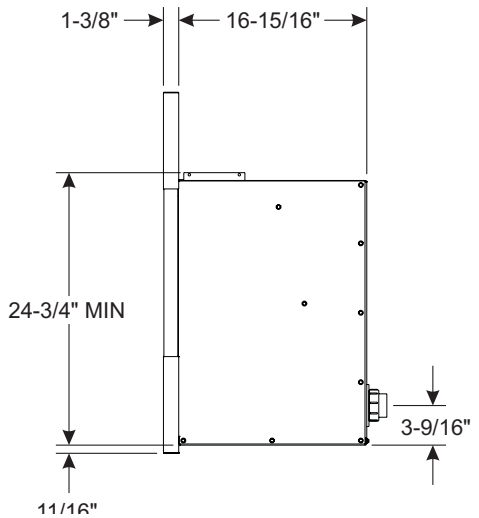


Figure 45

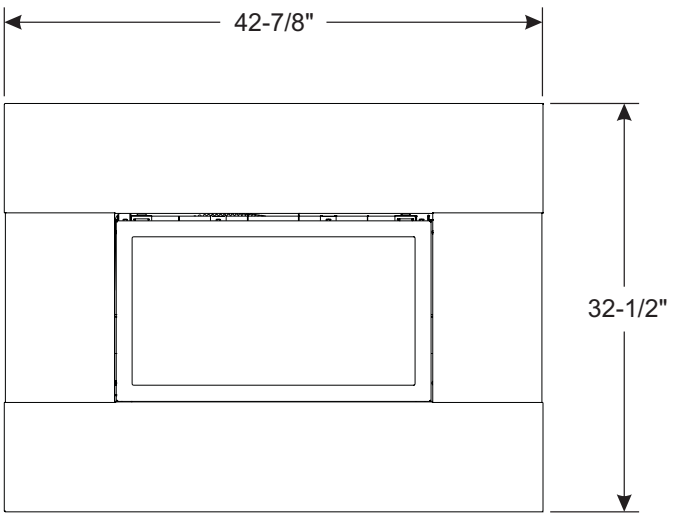


Figure 48
Fireplace - 42-7/8 inch Louverless Surround Kit
FHK28(BL,SS) - Contains surround brackets and air deflector

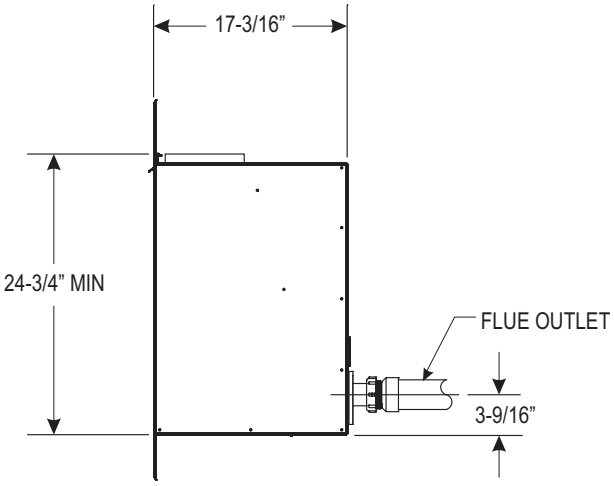


Figure 46

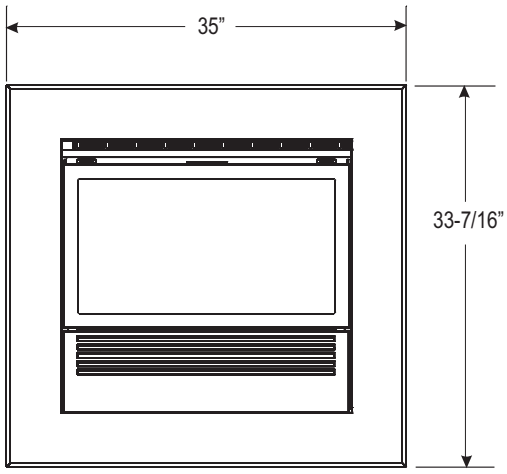


Figure 49
Fireplace In Wall - 35 Inch Picture Frame Surround
FWK28(BL,CM,HP,SS) - Contains surround, hood, and lower front

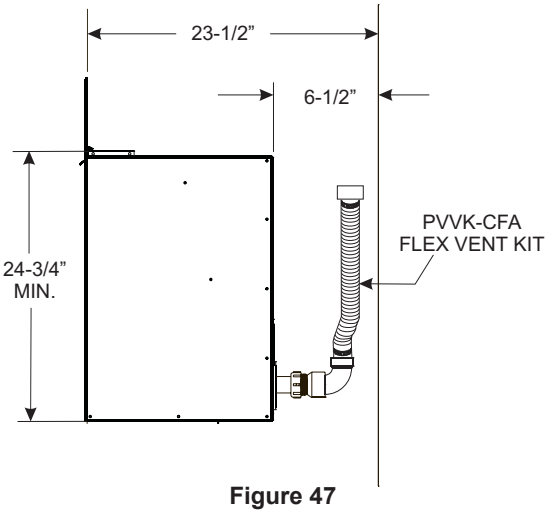


Figure 47
Fireplace with Flex Vent

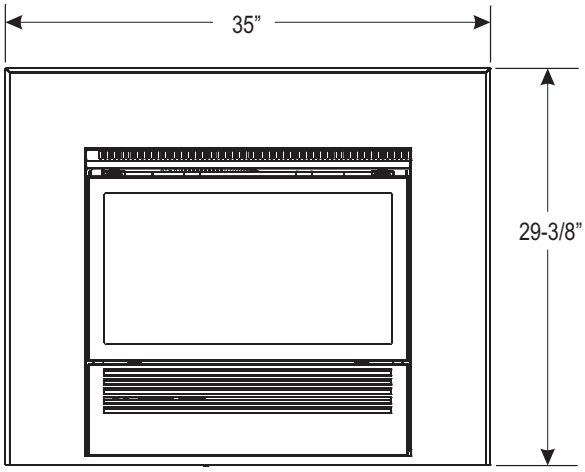


Figure 50
Fireplace - 35 Inch Surround Kit
FFK28(BL,CM,HP,SS) - Contains surround, hood, & lower front

FIREPLACE MANTIS SPECIFICATIONS

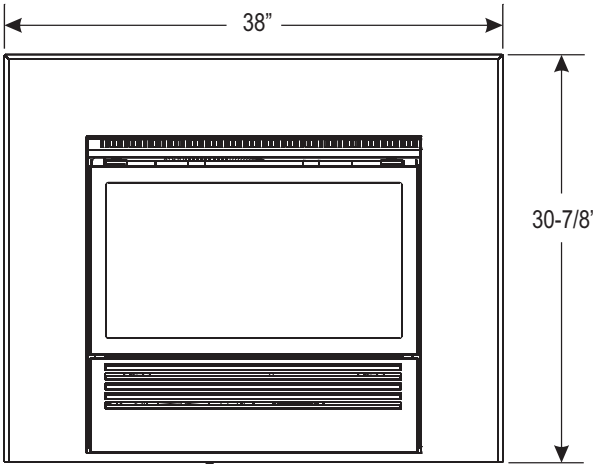


Figure 51
Fireplace Mantis with 38 Inch Surround
FIK28(BL,CM,HP,SS) - Contains surround, hood, & lower front

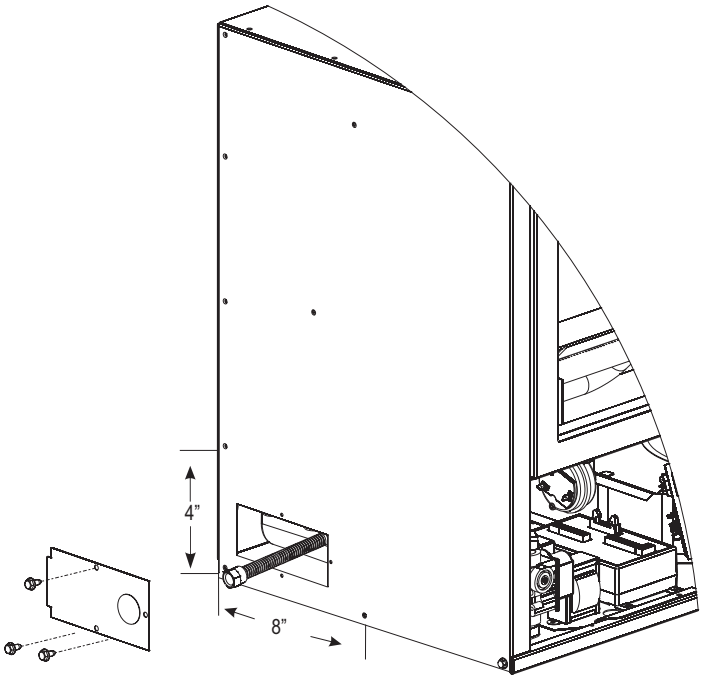


Figure 52
Clearance for Access Panel In-Wall Units
See Gas Connection Instructions.

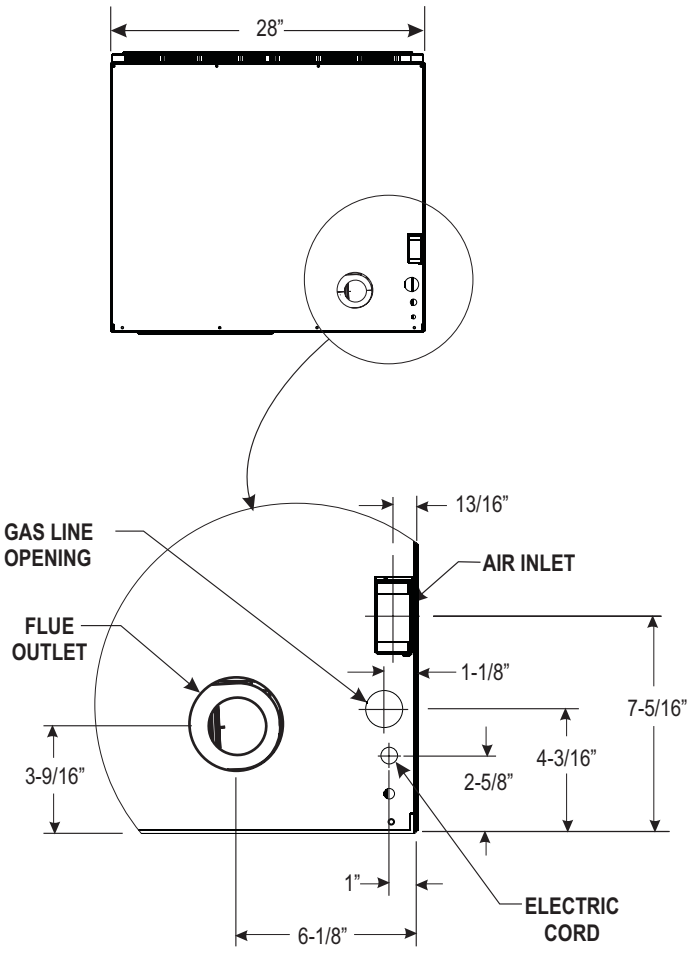


Figure 53

GAS CONNECTION INSTALLATION

⚠ CAUTION

The gas supply line to the fireplace must be installed under conditions which will allow for easy removal of the fireplace from its location for servicing of the fireplace. For fireplace insert installation, incorporate a loop into the flexible gas line.

Under no circumstances should the gas supply line to the fireplace be installed in a way that would prevent the fireplace from being serviced or inspected.

GAS SUPPLY LINE TO FIREPLACE

1. Pull the factory installed flexible gas line through the hole in the back panel. See Figures 54 and 55.
2. Connect the gas supply line to flexible gas hose. Ensure that flexible gas hose is not kinked after fitting gas supply line. Any excess flexible line can be pushed back into the fireplace.
3. Place rubber grommet that is supplied in hardware packet over the flexible gas line and secure in the hole in the back of the fireplace.

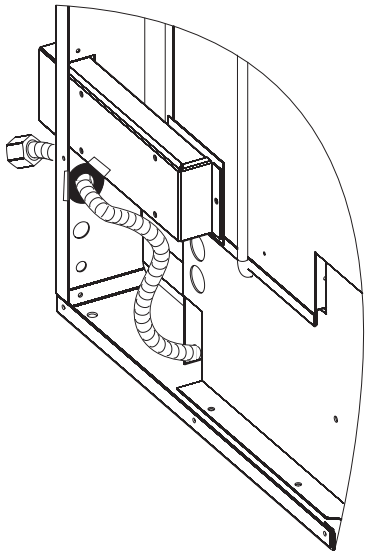


Figure 54 - Fireplace Mantis

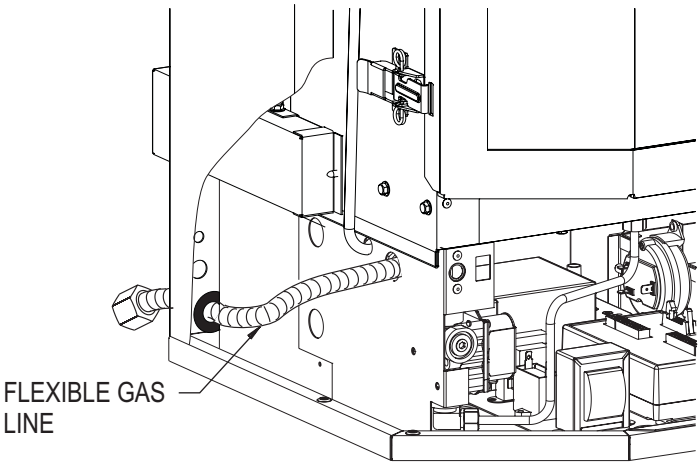


Figure 55 - Bay Window Mantis

Gas Connection - In-Wall Units - Fireplace Mantis ONLY

1. Remove the access plate on the left side of the cabinet by removing three screws as shown in Figure 56. Put the screws aside.
2. Push the factory supplied flexible gas line through the access hole on the side.
3. Remove the knockout from the access plate and insert the flexible gas line through the hole.
4. Secure the access plate to the cabinet with three screws removed in Step 1.
5. A plastic push in plug is supplied in the hardware package, insert the plug into the 1-3/8 inch hole in the back of the unit.
6. Insert the rubber grommet into the hole in the access plate to protect the flexible gas line.

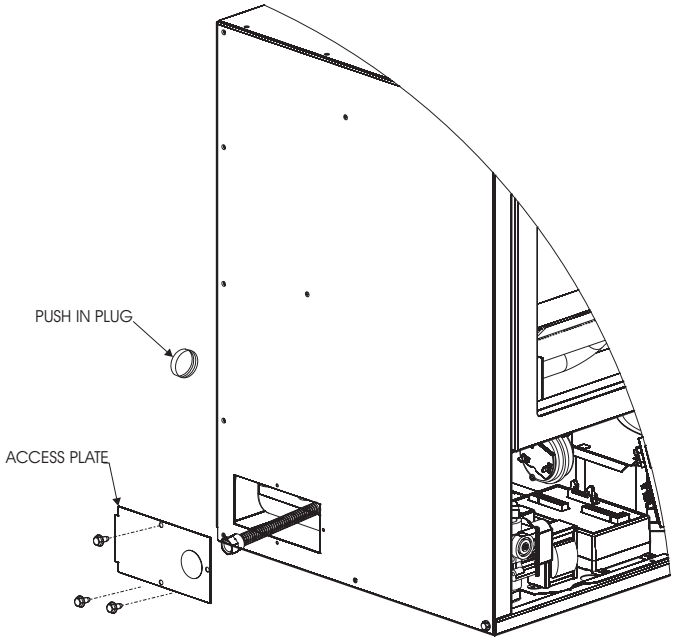


Figure 56
Gas Connection, Fireplace Mantis In-Wall Units

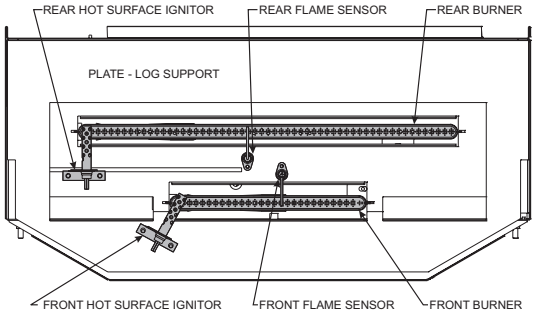
BAY WINDOW MANTIS LOG SET INSTALLATION INSTRUCTIONS

Log Installation

Proper positioning of the logs is critical to the safe and clean operation of the fireplace. If the logs are not placed in the proper position, the fireplace can soot, or create an unsafe operating condition.

⚠ CAUTION

Do not handle these logs with your bare hands! Always wear gloves to prevent skin irritation. After handling the logs, wash your hands gently with soap and water.



Firebox Layout
Figure 57

Installation Sequence

1. To access the log set parcel, lift off the top panel.
2. Pivot the left and right panels open.
3. Unhook the main door latches located on the right and left side of the fireplace, then remove the door.
4. Place the Rear Right Log (B) and the Rear Left Log (A) behind the rear burner all the way against the back of the firebox. See Figure 58.

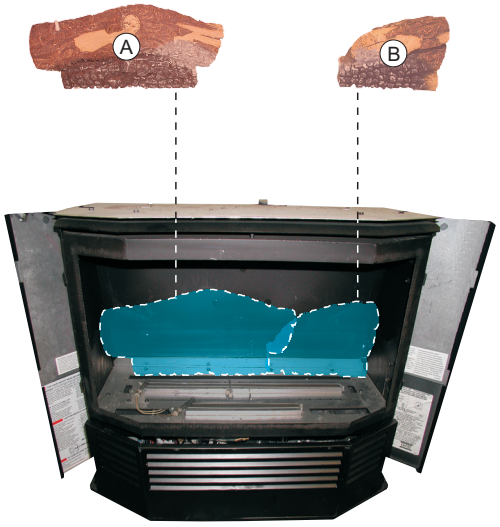


Figure 58

5. Place the Front Left Log (C) into the front left corner of the firebox, and position into the notch on the bottom left of Log (A). See Figure 59.

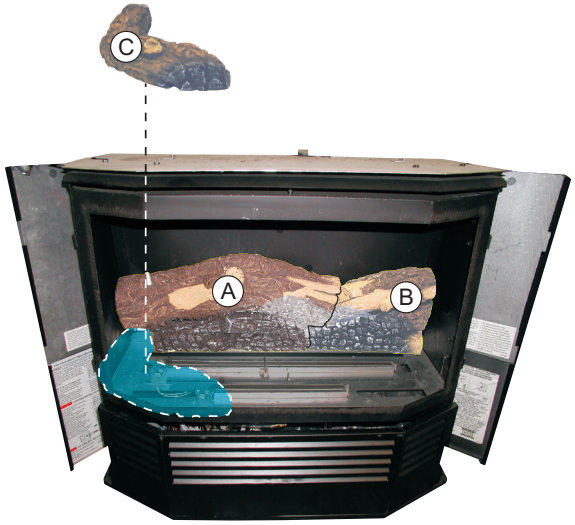


Figure 59

6. Place the Center Log (D) over the flame sensors in the middle of the firebox. Log (D) should be positioned to the left side of the firebox. See Figure 60.

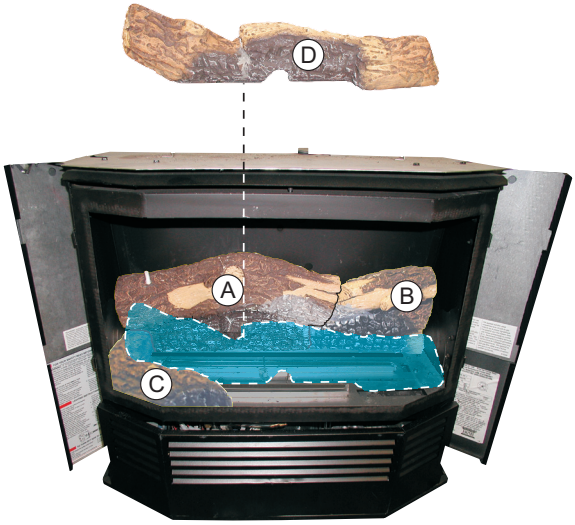


Figure 60

7. Place the Front Right Log (E) in the right front corner of firebox. It should fit snug into the corner. See Figure 61.

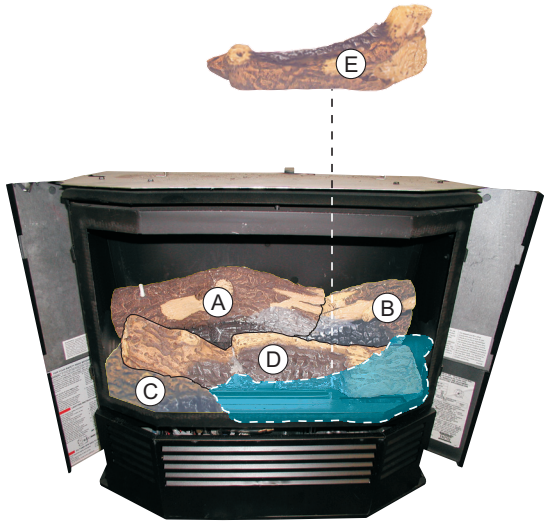


Figure 61

8. Place the Top Right Log (G) onto the pins on (B), (D) and (E) Logs. The “legs” of (G) Log will rest on (D) and (E) Logs. The pins must fit into the holes in the bottom of (G) Log to ensure proper alignment of (B), (D) and (E) Logs. See Figure 62.
9. Place the Top Left Log (F) onto the pins on (A) and (D) Logs. The “legs” of (F) Log will rest on (D) Log. The pins must fit into the holes in the bottom of (F) Log to ensure proper alignment of (A) and (D) Logs. See Figure 5.

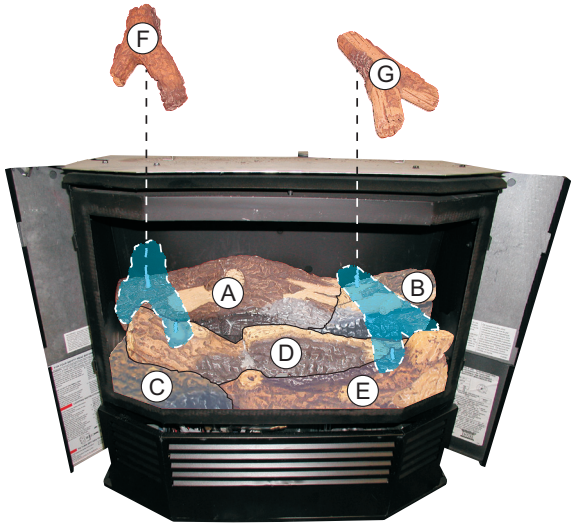
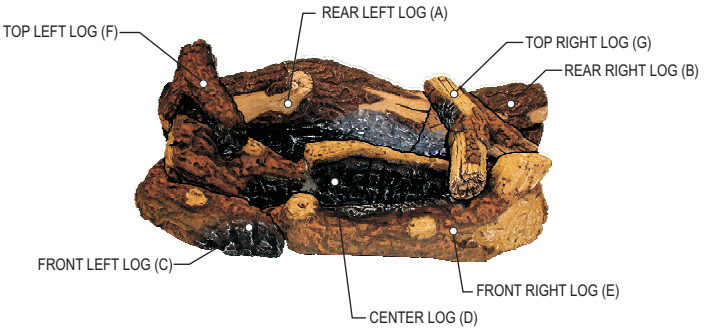


Figure 62

10. Verify that the Rear Logs (A) and (B) are still against the back of the firebox.
11. Verify that the logs are not in contact with the flame sensor. Interference with the flame sensor will effect the operation.
12. Place the door assembly on the fireplace and secure with the main door latches located on the right and left sides of the fireplace.
13. Close the left and right panels.
14. Reattach the top panel.
15. The installation of the log set is complete.



Log Assembly
Figure 63

FIREPLACE MANTIS LOG SET INSTALLATION INSTRUCTIONS

Log Installation

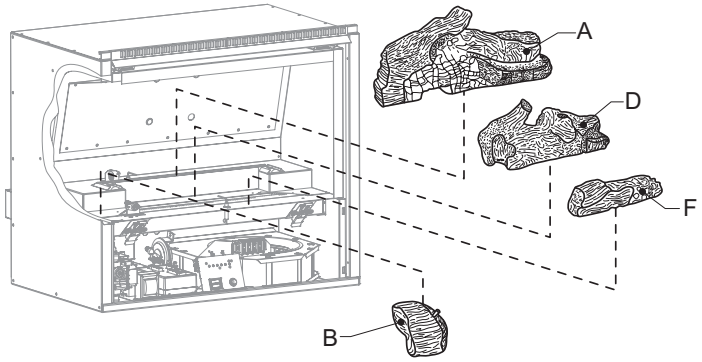
Proper Positioning of the logs is critical to the safe and clean operation of this fireplace. If the logs are not placed in the proper position, the fireplace can soot, or create an unsafe operating condition.

⚠ CAUTION

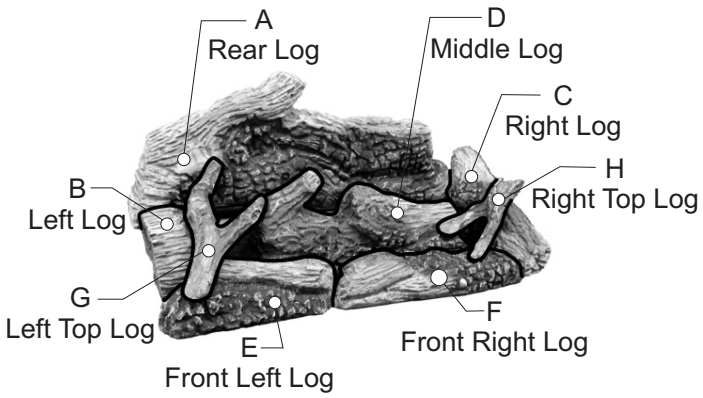
Do not handle these logs with your bare hands! Always wear gloves to prevent skin irritation. After handling the logs, wash your hands gently with soap and water.

Log Placement

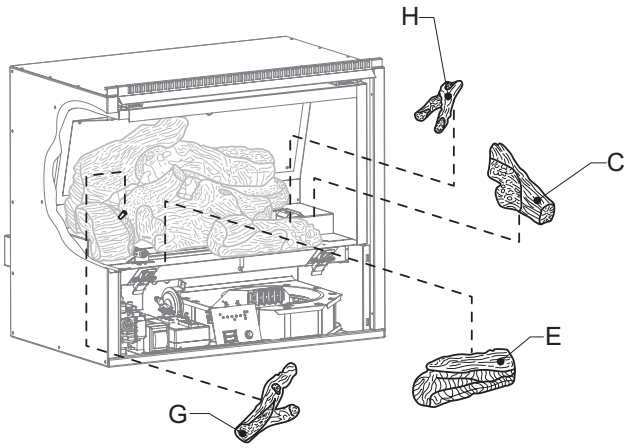
1. Place the Rear Log (A) onto the rear log support. The notch in the Rear Log fits over the rear igniter. The Rear Log (A) should be all the way to the back of the firebox and as far to the left side as possible. See Figure 64.
2. Place Left Log (B) on the left rear log support shelf. The charred portion of the log must face inward. See Figure 64.
3. Place the Middle Log (D) on front log support between the front and back burners. The log must be as far back on the support as possible. See Figure 64.
4. Place the Right Log (C) on the right rear log support shelf. The top of log rests on Rear Log (A) and bottom of log rests the front log support shelf. The charred portion of log must face inward. See Figure 65.
5. Place the Front Right Log (F) on the right side of firebox bottom. The notch in the bottom of Front Right Log fits over the front flame sensor. The log should be positioned fully forward and to the right against the Right Log (C). See Figure 64.
6. Place the Front Left Log (E) on left side of the firebox bottom. The notch in bottom of Front Left Log fits over front Igniter. The log should be positioned full forward and to the left. See Figure 65.
7. Place the Left Top Long Log (G) on the pin on Left Log (B). The upper left leg of Left Top Log will rest on Rear Log (A). The upper right leg of Left Top Log will rest on Middle Log (D).
8. Place the Right Top Log (H) on the pin on the Right Log (C). The bottom right leg of the Right Top Log (H) will rest on the Front Right Log (F).
9. Verify that the logs are not in contact with the flame sensor. Interference with the flame sensor will effect the fireplace's operation.



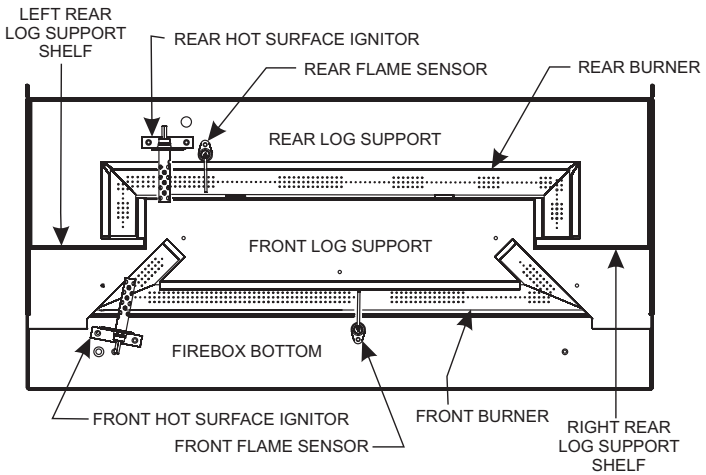
Log Placement
Figure 64



Log Assembly
Figure 66



Log Placement
Figure 65



Firebox Layout
Figure 67

WIRING

⚠ WARNING

Potential risk of fire, electric shock, and personal injury. Take precautions to reduce such risks.

⚠ CAUTION

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

This fireplace is equipped with a three-prong [grounding] plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle. Do not cut or remove the grounding prong from this plug. For an ungrounded receptacle, an adapter, which has two prongs and a wire for grounding, can be purchased.

Proper line voltage polarity must be maintained in order for the control system to operate correctly. Verify the incoming neutral line is connected to the white wire and the incoming “hot” line is connected to the black wire. The fireplace will not operate properly unless the polarity and ground are correct.

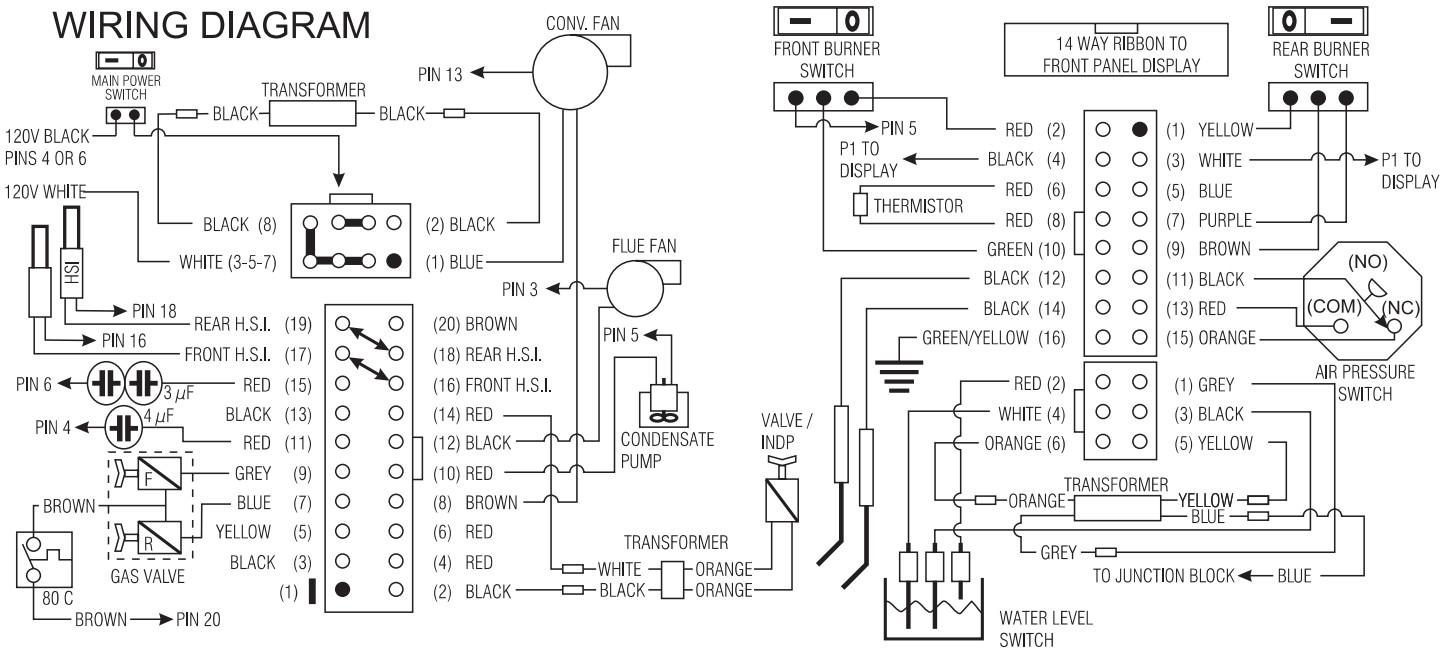


Figure 68

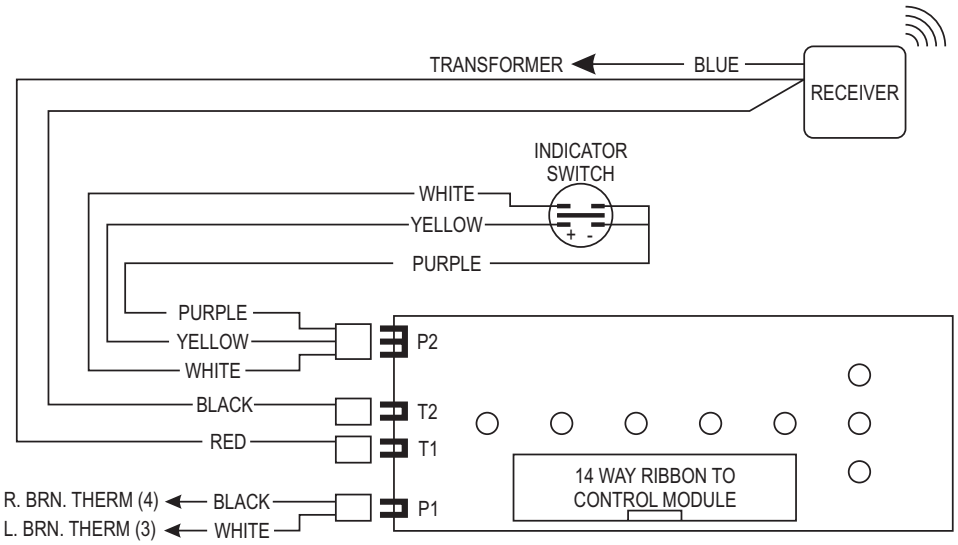


Figure 69

START UP CHECK LIST

⚠ WARNING

BEFORE OPERATING THIS Fireplace, CAREFULLY READ THE FOLLOWING.

1. Verify the gas line service does not exceed 10.5 in. w.c. and is not below 5.0 in. w.c. for natural gas, nor exceeds 13.0 in. w.c. or is below 11.0 in. w.c. for LP gas.
2. Check and inspect the fireplace for gas leaks. In the event of gas leaks, cut off the gas supply to the fireplace immediately and call your gas supplier. Verify the gas line has been purged.
3. Verify that all exhaust and inlet air pipes are unobstructed and properly joined.
4. Visually verify the burners are free of dust and debris. See Figures 56 and 67.
5. Check and verify that logs are place correctly. See pages 33 to 35. The logs must be in the correct position or the fireplace will not operate correctly.

DO NOT light fireplace without the logs installed, the fireplace will not operate properly.

6. Verify that all panels are secured in place and that the glass assembly door has been locked in position.
7. Verify the two burner switches are in the OFF position before applying power and the main power switch.
8. After verifying and checking all the above points, proceed to lighting instructions. Refer to Page 38.
9. Verify that the polarity of the connections are correct and the line voltage power leads are secure.

Note: If using a surround, verify it is installed per the instructions included with the kit.

LIGHTING INSTRUCTIONS

FOR YOUR SAFETY READ BEFORE LIGHTING

⚠ WARNING: IF YOU DO NOT FOLLOW THESE INSTRUCTIONS EXACTLY, A FIRE OR EXPLOSION MAY RESULT CAUSING PROPERTY DAMAGE, PERSONAL INJURY, OR LOSS OF LIFE.

A. BEFORE LIGHTING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

WHAT TO DO IF YOU SMELL GAS

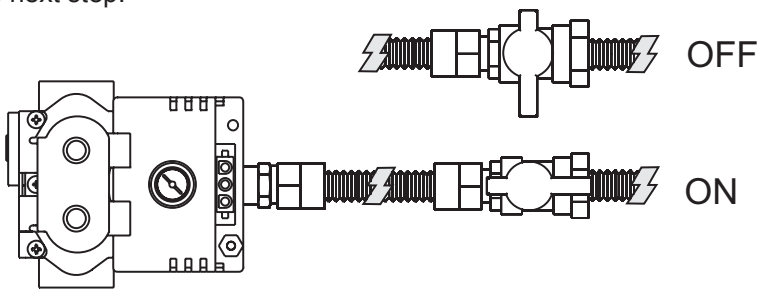
- Do not try to light any appliance.
- Do not touch any electrical switch.
- Do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you can not reach your gas supplier, call the fire department.

B. Use the on-the-wall switch or remote control switch to turn the gas control on/off. Any attempted repairs or adjustments should be performed by a qualified service technician. Applying force or attempted repair may result in a fire or explosion.

C. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

LIGHTING INSTRUCTIONS

1. STOP! Read the safety information above on this label.
2. Set the thermostat, if used, to the lowest setting.
3. Turn off all electric power to the appliance. Turn off electrical control switches to "O."
4. This appliance is equipped with an ignition device that automatically lights the burner. Do not try to light the burner by hand.
5. Remove the front access panel below the glass door by pulling both sides forward simultaneously.
6. Turn gas line valve to "ON."
7. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "A" in the safety information above. If you do not smell gas, go to the next step.
8. Turn on electric power to the appliance. Turn on electric control switches to "▬".
9. Replace the front access panel, press both sides of the panel until both lock position.
10. Set thermostat to desired setting (if available).
11. If the appliance will not operate, follow the instructions "TO TURN OFF GAS TO APPLIANCE," and call your service technician or gas supplier.



TO TURN OFF GAS TO APPLIANCE

1. STOP! Read the safety information above.
2. Set the thermostat, if used, to the lowest setting.
3. Turn off electric power to the appliance.
4. Remove front access panel.
5. Turn gas line valve to "OFF."
6. Replace front access panel.

START UP AND ADJUSTMENTS

A. With main electrical power to the fireplace turned off, install 4 AA sized 1.5V batteries into the remote receiver. The remote receiver is located inside the fireplace, mounted to the top of the blower housing and secured with hook and loop tape. See Figure 70. Set up receiver and remote per instructions on pages 41 - 46.

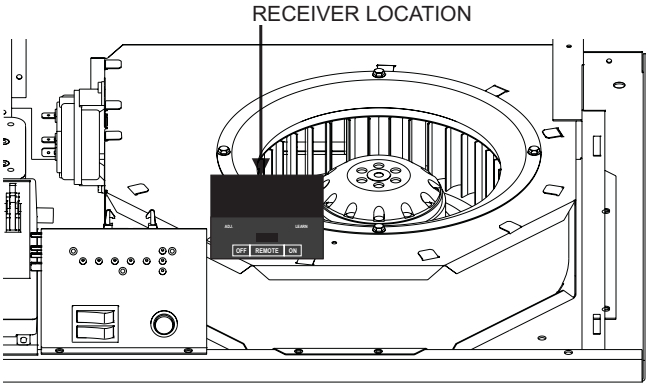


Figure 70

B. Turn on the main electrical power to the fireplace and turn the main burner switch to the ON position. See Figure 71. Verify power is on by checking if there is power to the circuit board. If the unit has power, the power light will be illuminated.

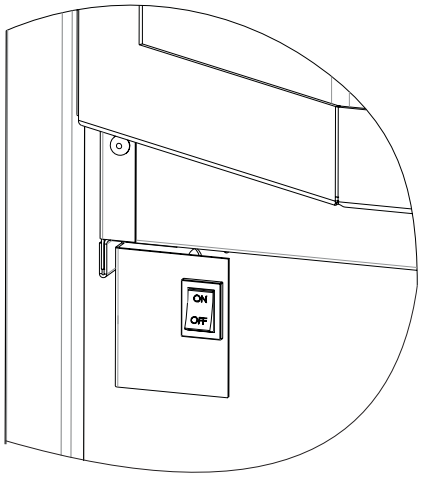


Figure 71

C. Turn on the main gas supply.

D. Turn both burner switches on to ignite both the front and rear burners. Burner switches must remain in the ON position for the remote to function. See Figure 72.

E. The Display Panel board should be energized, and the power light will be illuminated.

Sequence of Operations – Front and Back Burners

1. The Display Panel will be energized, and the lights for the front burner and back burner will flash.
2. The inducer will activate immediately and will prove the pressure switch within 16 seconds. This will initiate the ignition sequence.
3. The rear igniter (HSI) will energize and start to glow red.
4. Within 3 to 5 seconds, the gas valve will open and ignite the rear burner. The flame sensor will verify the flame is present within 2 to 5 seconds.
5. The igniter for the front burner will energize 5 to 7 seconds after the flame is established on the rear burner.
6. The gas valve will open to ignite the front burner within 3 to 5 seconds. The flame sensor will verify the flame is present within 2 to 5 seconds.
7. As the Mantis warms up, the circulating blower will activate, starting on Low speed. The Low Blower L.E.D. will light when the blower turns on.
8. As the Mantis continues to operate, the speed of the circulating blower will increase, and the L.E.D. for Medium and High will appear.

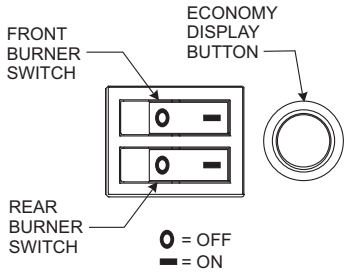


Figure 72

⚠ CAUTION

When switching from one burner to the other burner, be sure to first turn "ON" the desired burner before turning "OFF" the burner that is operating. Failure to follow this sequence may result in the fireplace needing to be reset. See page 49 - Resetting the Fireplace.

START UP AND ADJUSTMENTS

Sequence of Operations – One Burner Only

1. The Display Panel will be energized, and the light for either the front burner or back burner will flash, corresponding to which burner switch is activated.
2. The inducer will activate immediately and will prove the pressure switch within 16 seconds. This will initiate the ignition sequence.
3. The igniter (HSI) will energize and start to glow red.
4. Within 3 to 5 seconds, the gas valve will open and ignite the burner. The flame sensor will verify the flame is present within 2 to 5 seconds.
5. The igniter for the front burner will energize 5 to 7 seconds after the flame is established on the burner.
6. As the Mantis warms up, the circulating blower will activate, starting on Low speed. The Low Blower L.E.D. will light when the blower turns on.
7. As the Mantis continues to operate, the speed of the circulating blower may increase.

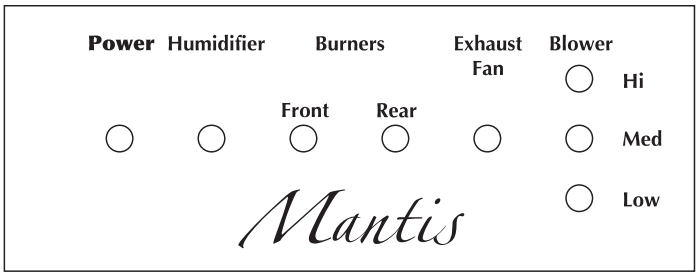


Figure 73

Shut Down Instructions

To turn the fireplace off, simply push “OFF” on the remote or switch the burner switch(es) to the “OFF” position. See Figure 56. DO NOT cut the main electrical power to the fireplace.

The circulating blower will continue to operate after the burners are turned off. The blower will stop automatically once the fireplace has cooled down.

Checking Manifold Pressure

Both Propane and Natural gas valves have a built-in pressure regulator in the gas valve. Natural gas models will have a manifold pressure of approximately 4.0 in. w.c. at the valve outlet, with the inlet pressure to the valve at 5.0 in. w.c. to 10.5 in. w.c. Propane gas models will have a manifold pressure approximately 7.0 in. w.c. at the valve outlet, with the inlet pressure to the valve from 11.0 in. w.c. to 13.0 in. w.c.

A 1/8 inch N.P.T. plugged tapping, accessible for test gauge connection, is located on the outlet side of the gas control.

Blower Operation

The circulating air blower will automatically engage and increase in speed depending on the operation of the burners. In most circumstances, the circulating blower will start 3 to 5 minutes after ignition of the burners.

Once the fireplace is turned off or the call for heat has been satisfied, the circulating blower will continue to run. The blower will automatically turn off once the fireplace has cooled down.

High Altitude

The Mantis can be installed to altitudes up to 10,000 feet in the U.S., and up to 4,500 feet in Canada. The installation must meet the requirements of the National Fuel Gas Code or local jurisdictions. A high altitude kit is needed for installation above 2,000 feet. See the instructions provided with the Mantis High Altitude Kit for derate instructions.

Humidifier Operation

When the fireplace has been running, the humidifier L.E.D. (Figure 73) may turn on to signal that the pump has been activated. Refer to Page 47 - Automatic Humidifier Operation.

Paint Curing - First Firing

The Mantis Power-Vent High-Efficiency Fireplace has been painted with the high quality heat resistant silicon paint. To ensure that the paint is properly cured, allow the fireplace to operate with both burners on, for approximately 1 hour. During the initial firing of the fireplace, it is common for smoke to appear.

⚠ CAUTION

DO NOT touch the surface of the fireplace. The paint will soften during the initial operation, and will harden over time. Once the paint is cured, it will not soften again.

- To prevent triggering of smoke alarms, supply proper ventilation to the room where the unit is installed.
- During initial firing of logs, an odor will occur as the logs are curing. It is also common for the burner to burn with a yellow flame.
- DO NOT clean the fireplace with any caustic or abrasive cleaning solutions. This will damage the surface.
- Any damage to the painted surfaces should be repaired only with authorized paint available from your Mantis Dealer.

FRBTC REMOTE INSTRUCTIONS

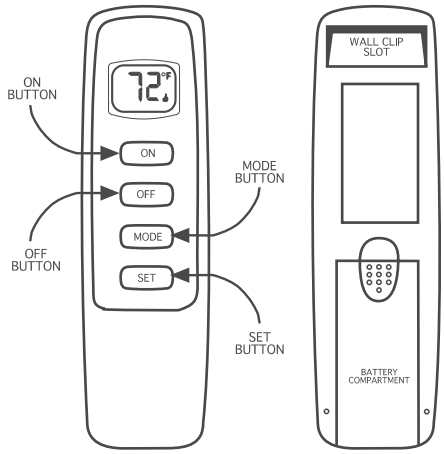
INTRODUCTION

This remote control system was developed to provide a safe, reliable and user-friendly remote control system for gas heating appliances. This all battery system operates independently of household current. The system operates on radio frequencies with a non-directional signals. The SYSTEM's operating range is approximately 20 feet. The system operates on one of 1,048,576 security codes that are programmed into the transmitter at the factory; the remote receiver's code must be matched to that of the transmitter prior to initial use.

Review **COMMUNICATION SAFETY SECTION** under TRANSMITTER section and **THERMOSTAT SAFETY SECTION** under REMOTE RECEIVER section. These signal/temperature safety features shut down the fireplace system when a potentially unsafe condition exists.

TRANSMITTER

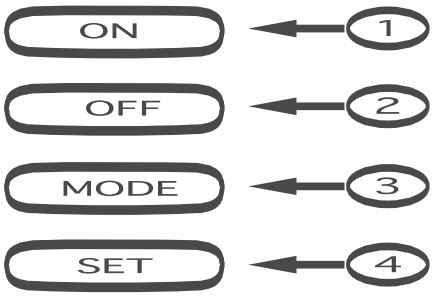
The remote control system offers the user a battery-operated remote control.



The transmitter operates on (2) 1.5V AAA batteries.

It is recommended that ALKALINE batteries always be used for longer battery life and maximum operational performance.

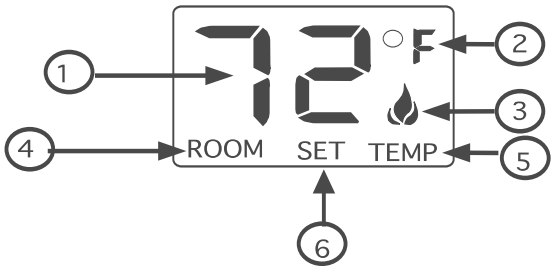
Before using the transmitter, install the (2) AAA transmitter batteries into the battery compartment. (Use caution that batteries are installed in the proper direction)



KEY SETTINGS

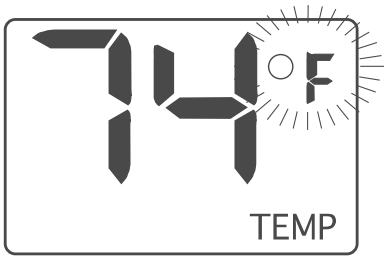
- ON - Operates unit to on position, Manually ON.
- OFF - Operates unit to off position, Manually OFF.
- MODE - Changes unit from manual mode to thermostat mode.
- SET - Sets temperature in thermostat mode.

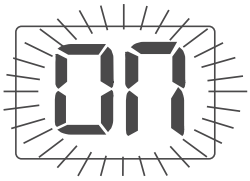
LCD - Liquid Crystal Display



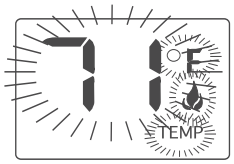
1.	**DISPLAY**	Indicates CURRENT room temperature .
2.	**°F OR °C**	Indicates degrees Fahrenheit or Celsius.
3.	**FLAME**	Indicates burner/valve in operation.
4.	**ROOM**	Indicates remote is in THERMOSTAT operation.
5.	**TEMP**	Appears during manual operation.
6.	**SET**	Appears during time the of setting the desired temperature in the thermostat operation.

FRBTC REMOTE INSTRUCTIONS

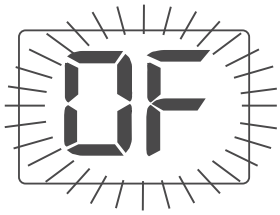




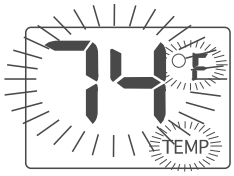
SCREEN WHILE DEPRESSING ON KEY



SCREEN AFTER 3 SECOND DEFAULT

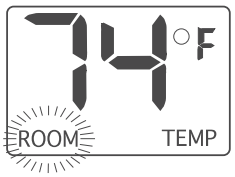


SCREEN WHILE DEPRESSING OFF KEY

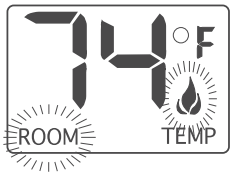


SCREEN AFTER 3 SECOND DEFAULT

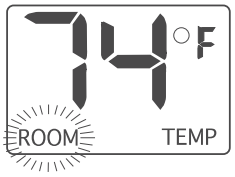
THERMO SET



THERMO MODE



THERMO ON



THERMO OFF

SETTING °F / °C SCALE

The factory setting for temperature is **°F.** To change this setting to °C, first

- Press the ON key and the OFF key on the transmitter at the same time this will change from °F to °C. Follow this same procedure to change from °C back to °F.

MANUAL FUNCTION

To operate the system in the manual "MODE" does the following.

ON OPERATION

Press the ON key the fireplace flame will come on. During this time the LCD screen will show ON, after 3 seconds the LCD screen will default to display room temperature and the word TEMP will show. **(Flame icon will appear on LCD screen in on mode)**

OFF OPERATION

Press the OFF key the fireplace flame will shut off. During this time the LCD screen will show OF, after 3 seconds the LCD screen will default to display room temperature and the word "TEMP" will also show on the screen.

THERMOSTAT FUNCTION

SETTING DESIRED ROOM TEMPERATURE

This remote control system can be thermostatically controlled when the transmitter is in the THERMOSTAT mode (The word **ROOM must be displayed on the screen**). To set the THERMOSTAT MODE and DESIRED room temperature,

Press the MODE key until the LCD screen shows the word ROOM, then the remote is in the thermostatic mode.

Press and hold the SET key until the desired set temperature is reached. (By pressing and holding the set key the LCD screen set numbers will increase from 45° to 99° then restart over at 45°) Next release the SET key. The LCD screen will display the set temperature for 3 seconds and the LCD screen will flash the set temperature for 3 seconds, then the LCD screen will default to display the room temperature.

TO CHANGE THE SET TEMPERATURE

Press and hold the SET key until the desired set temperature is reached. (By pressing and holding the set key the LCD screen set numbers will increase from 45° to 99° then restart over at 45°) Next release the SET key. The LCD screen will display the set temperature for 3 seconds, then will flash the set temperature for 3 seconds, then the LCD screen will default to display the room temperature.

Press the MODE key to disengage the thermostat mode. The word ROOM on the LCD screen will not show when the thermostat is not in operation.

NOTE: The highest SET temperature is 99° **Fahrenheit** (32° **Celsius**) and the lowest temperature is (45° **Fahrenheit** (6° **Celsius**).

FRBTC REMOTE INSTRUCTIONS

OPERATIONAL NOTES:

The Thermostat Feature on the transmitter operates the fireplace whenever the ROOM TEMPERATURE varies a certain number of degrees from the SET TEMPERATURE. This variation is called the “SWING” or TEMPERATURE DIFFERENTIAL. The normal operating cycle of an fireplace may be 2-4 times per hour depending on how well the room or home is insulated from the cold or drafts. The factory setting for the “swing number” is 2. This represents a temperature variation of +/- 2°F (1°C) between SET temperature and ROOM temperature, which determines when the fireplace will be activated. This function is pre-set at the factory.

The transmitter has ON and OFF manual functions that are activated by pressing either button on the face of the transmitter. When a button on the transmitter is pressed the word ON or OFF will appear on the LCD screen to show while the signal is being sent. Upon initial use, there may be a delay of three seconds before the remote receiver will respond to the transmitter. This is part of the system’s design.

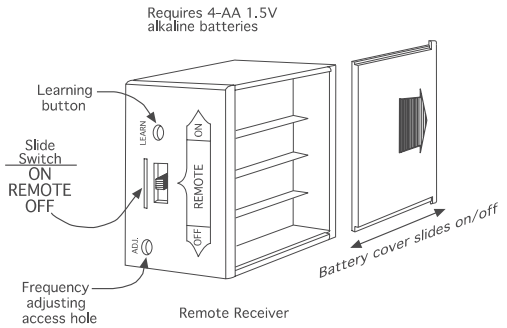
REMOTE RECEIVER

CAUTION: THE REMOTE RECEIVER SHOULD BE POSITIONED WHERE AMBIENT TEMPERATURES DO NOT EXCEED 130° F.

The remote receiver operates on 4 AA-size 1.5V batteries. It is recommended that ALKALINE batteries be used for longer battery life and maximum microprocessor performance. IMPORTANT: New or fully charged batteries are essential for proper operation of the remote receiver.

The remote receiver houses the microprocessor that responds to commands from the transmitter to control system operation. It emits one beep when it receives an ON or OFF command manually, but no beep when cycling on and off automatically in THERMOSTAT mode. The remote receiver has a 3-position slide switch for selecting the MODE of operation: ON/REMOTE/OFF

- With the slide switch in the ON position (toward the LEARN button), the system will remain on until the slide switch is placed in the OFF or REMOTE position.
- With the slide switch in the REMOTE position (centered), the system will only operate if the remote receiver receives commands ***from the transmitter.***
- With the slide switch in the OFF position (away from the LEARN button), the system is off.
- **It is suggested that the slide switch be placed in the off position if you will be away from your home for an extended period of time. If the remote receiver is mounted out of children’s reach, placing the slide switch in the OFF position also functions as a safety “lock-out” by both turning the system off and rendering the remote receiver inoperative.**



FRBTC REMOTE INSTRUCTIONS

CP (CHILDPROOF) FEATURE

This ECS remote control includes a CHILDPROOF “LOCK-OUT” feature that allows the user to “LOCK-OUT” operation of the fireplace, from the TRANSMITTER.

SETTING “LOCK-OUT” –(CP)

- To activate the “LOCK-OUT” feature, press and hold the ON button and the MODE button at the same time for 5 seconds. The letters CP will appear in the TEMP frame on the LCD screen.
- To disengage the “LOCK-OUT”, press and hold the ON button and the MODE button at the same time for 5 seconds and the letters CP will disappear from the LCD screen and the transmitter will return to its normal operating condition.
- To verify that transmitter is in the CP lock-out mode press any key and the LCD screen will show “CP”

NOTE: If the fireplace is already operating in the ON or THERMOSTAT MODES, engaging the “LOCK-OUT” will not cancel the operating MODE. Engaging the “LOCK-OUT” prevents only the manual operation of the TRANSMITTER. If in the auto modes, the THERMOSTAT operation will continue to operate normally. To totally “LOCK-OUT” the operation of the TRANSMITTER’S operating signals; the transmitter’s MODE must be set to OFF.

THERMOSTAT UPDATING FEATURE –TRANSMITTER – (T/S –TX)

This ECS remote control has a THERMOSTAT UPDATING Feature built into its software. The THERMOSTAT UPDATING Feature operates in the following manner, but only in the THERMOSTAT MODES:

The transmitter normally reads the ROOM temperature every 2 minutes checking the ROOM temperature against the SET temperature and then sends a signal to the receiver.

COMMUNICATION – SAFETY – TRANSMITTER – (C/S – TX)

This ECS remote control has a COMMUNICATION –SAFETY function built into its software. It provides an extra margin of safety when the TRANSMITTER is out of the normal 20 foot operating range of the receiver.

The COMMUNICATION – SAFETY feature operates in the following manner, in all OPERATING MODES – ON/ ON THERMOSTAT.

At all times and in all OPERATING MODES, the transmitter sends an RF signal every fifteen (15) minutes, to the receiver, indicating that the transmitter is within the normal operating range of 20 feet. Should the receiver NOT receive a transmitter signal every 15 minutes, the IC software, in the RECEIVER, will begin a 2-HOUR (120-minute) countdown timing function. If during this 2-hour period, the receiver does not receive a signal from the transmitter, the receiver will shut down the fireplace being controlled by the receiver. The RECEIVER will then emit a series of rapid “beeps” for a period of 10 seconds. Then after 10 seconds of rapid beeping, the RECEIVER will continue to emit a single “beep” every 4 seconds until a transmitter ON or MODE Button is pressed to reset the receiver. The intermittent 4-second beeping will go on for as long as the receiver’s batteries last which could be in excess of one year.

To “reset” the RECEIVER and operate the fireplace, you must press the ON or MODE button on the transmitter. By turning the system to ON, the COMMUNICATION -SAFETY operation is overridden and the system will return to normal operation depending on the MODE selected at the transmitter. The COMMUNICATION – SAFETY feature will reactivate should the transmitter be taken out of the normal operating range or should the transmitter’s batteries fail or be removed.

FRBTC REMOTE INSTRUCTIONS

THERMOSTAT SAFETY FEATURE – RECEIVER (T/S –RX)

This ECS remote control has a THERMOSTAT SAFETY feature that is built into the system's RECEIVER. This feature is temperature- activated and provides an extra margin of safety when the RECEIVER is operating where ambient temperatures exceed 130°F degrees inside the receiver case.

The THERMOSTAT SAFETY feature, in the RECEIVER, operates in the following manner, when the fireplace is in operation.

The receiver is thermally protected from extreme heat conditions. Heat can have negative effect on the operation of the receiver's microprocessors.

For REMOTE RECEIVERS that operate on BATTERY POWER, these heat conditions can cause batteries to discharge when temperatures exceed 115°F. Studies show that alkaline batteries, when exposed to a constant temperature of 115°F, can lose up to 50% of their operating power. When the battery cools down, it will partially recharge itself, but constant heating and cooling will reduce the battery's normal life expectancy.

When the ambient temperature at the THERMISTOR, *inside the receiver case,* reaches 130°F, the THERMISTOR will automatically shut the fireplace down and the RECEIVER will begin emitting a series of 2 "beeps", every 4 seconds. When the ambient temperature, at the RECEIVER, drops between 120°F and 130°F, the user can reactivate the fireplace by pushing the MODE button on the transmitter. The word ON must display on the LCD screen. When the MODE button is pressed to ON, the THERMISTOR "resets" itself and the fireplace will begin operating again. However, the "beeping" will continue, if the ambient temperature remains between 120°F and 130°F. This "beeping" alerts the user that the RECEIVER should be repositioned so the ambient temperature drops below 120°F.

When the temperature drops below 120°F, the "beeping" will cease, providing the user has "reset" the THERMISTOR by pushing the MODE button to ON to operate the fireplace, either manually or thermally. Allow sufficient time for the receiver to cool below 120°F, and then press MODE button to stop beeping.

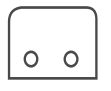
MATCHING SECURITY CODES

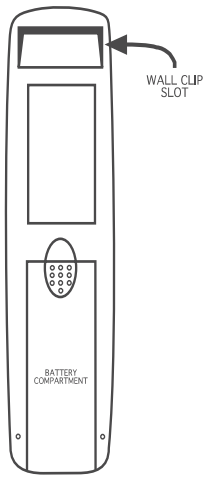
Each transmitter can use one of 1,048,576 unique security codes. It may be necessary to program the remote receiver to LEARN the security code of the transmitter upon initial use, if batteries are replaced, or if a replacement transmitter is purchased from your dealer or the factory. When matching security codes, be sure slide button on the receiver is in the REMOTE position; the code will NOT "LEARN" if the slide switch is in the OFF position. Program the remote receiver to LEARN a new security code by pushing in the LEARN button on the top of the remote receiver and then pressing any button on the transmitter. A change in the beeping pattern, at the receiver, indicates the transmitter's code has been programmed into the receiver. When an existing receiver is matched to a new transmitter, the new security code will overwrite the old one.

The microprocessor that controls the security code matching procedure is controlled by a timing function. If you are unsuccessful in matching the security code on the first attempt, wait 1 - 2 minutes before trying again--this delay allows the microprocessor to reset its timer circuitry--and try up to two or three more times.

TRANSMITTER WALL CLIP

The transmitter can be hung on a wall using the clip provided. If the clip is installed on a solid wood wall, drill 1/8" pilot holes and install with the screws provided. If it is installed on a plaster/wallboard wall, first drill two 1/4" holes into the wall. Then use a hammer to tap in the two plastic wall anchors flush with the wall; then install the screws provided.





FRBTC REMOTE INSTRUCTIONS

BATTERY LIFE

Life expectancy of the alkaline batteries in the transmitter should be at least 12 months. Check and replace all batteries annually. When the transmitter no longer operates the remote receiver from a distance it did previously (i.e., the transmitter's range has decreased) or the remote receiver doe not function at all, the batteries should be checked. It is important that the remote receiver batteries are fully charged and provides continuous output voltage of a least 5.3 volts. The length of the wire between the remote receiver and gas valve directly affects the operating performance of the remote system. The longer the wire, the more battery power is required to deliver signals between the remote receiver and the gas valve. Recommended length is no longer than 20 feet. The transmitter should operate with as little as 5.0 volts battery power.

TROUBLE SHOOTING

If you encounter problems with your fireplace system, the problem may be with the fireplace itself or it could be with the ECS remote. Review the fireplace manufacturer's operation manual to make sure all connections are properly made. Then check the operation of the ECS remote in the following manner:

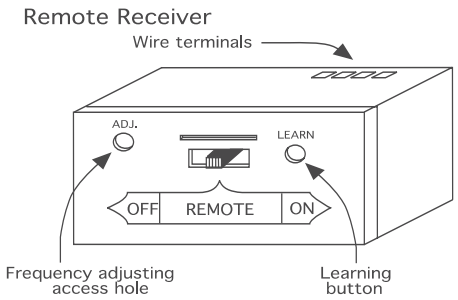
- Make sure the batteries are correctly installed in the RECEIVER. One reversed battery will keep receiver from operating properly.
- Check battery in Transmitter to make sure contacts are touching (+) and (-) ends of battery. Bend metal contacts in for tighter fit.
- Be sure RECEIVER and Transmitter are within 20'-25' operating range.
- Keep RECEIVER from temperatures exceeding 130° F. Battery life shortened when ambient temperatures are above 130° F.
- If RECEIVER is installed in tightly enclosed metal surround, the operating distance will be shortened.

RECEIVER ADJUSTMENT – RECOMMENDED ADJUSTMENT

NOTE: The slide button, White or Black, covers the ADJ access hole when installed.

A. To adjust at the receiver, use a small slotted screwdriver. Turn the adjustment screw counter-clockwise about 5 degrees or a maximum of 1/8 turn. This should correct the distance problem.
B. If that does not correct the problem, return adjustment screw to original position and then turn adjustment screw clockwise.

This adjustment is like tuning your radio. If you keep turning the adjustment screw, in either direction, you will go past the proper setting (tuning).



SPECIFICATIONS

BATTERIES: Transmitter 12V (A23)
Remote Receiver 6V - 4ea. AA1.5 Alkaline FCC ID No.'s: transmitter - K9L1002TX; receiver - K9L3001RX
Operating Frequency: 303.875MHZ Canadian ISC ID No.'s: transmitter - 2439 102 728; receiver - 2439 102 728A

AUTOMATIC HUMIDIFIER OPERATION

The Mantis Power-Vent High-Efficiency Fireplace has an automatic humidifier designed into the fireplace. As the fireplace operates, condensate is created and is collected in a tank inside the fireplace. The condensate pump will take the collected condensate and pump it to a stainless steel tray where it evaporates into the airstream adding humidity to the heated space.

Note: When the automatic humidifier is engaged and is transferring the condensate, there may be a noticeable hissing sound. This is normal, and the sound should persist for less than 30 seconds.

The amount of condensate created will vary based on several factors including but not limited to location of fireplace, air temperature, length of venting, and whether the vent pipe is horizontal or vertical. The humidifier will operate intermittently while the fireplace is operating.

While the condensate pump is transferring the condensate from the tank to the tray, the humidifier L.E.D. light will illuminate during pump operation. See Page 40, Figure 73. Once the condensate is transferred, the light will turn off.

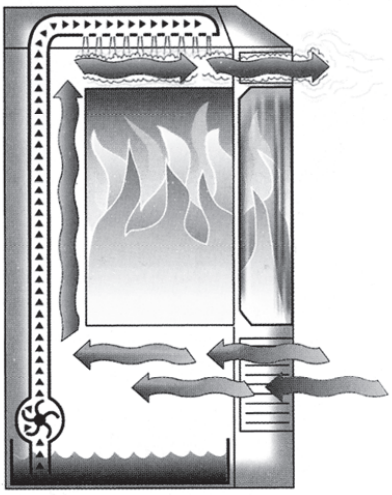


Figure 74

OPTIONAL CONTROLS

Economy Mode (Red Button Operation)

To utilize this feature, a programmable control or thermostat must be connected to the fireplace. A red button is located next to the burner switches on the front control panel. See Figure 75. This is called the economy mode.

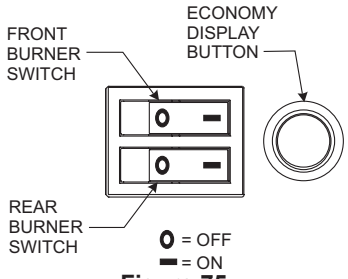


Figure 75

To use this feature, both burner switches need to be in the “ON” position, and the red button must be pressed so it is illuminated. This will ignite the front burner. The front burner will remain on when the red button is illuminated, and the back burner will cycle with the thermostat. The red button acts only as an override for the front burner.

To Deactivate

Press the red button so it is not illuminated, then the fireplace will return to normal operation.

Battery Operated Controls

This unit is equipped with a factory installed wireless remote. All Remote Controls are all battery operated devices.

Optional Battery Operated Control	
FRBTP	Battery Operated Remote with Programmable Thermostat
TRW	Battery Operated Wireless Remote Wall Thermostat

Note: These optional controls will work with the factory installed receiver. No wiring is required.

⚠ CAUTION

Before connecting any controller, disconnect power to the fireplace.

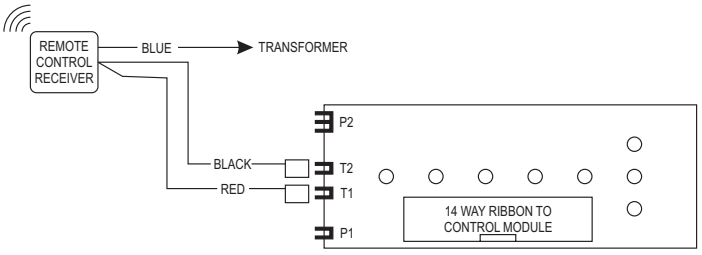


Figure 76

Adjust the remote from the instructions provided with the remote control.

Note: If the fireplace will not be used for long periods of time, turn the burner switches to the “OFF” position and turn the power off at the power source.

MAINTENANCE & SERVICE

The Mantis should be inspected and serviced annually by a qualified service person. This will ensure that the fireplace is operating safely and efficiently. Should you suspect any abnormal operation, contact a service person that has been trained to service this product.

Cleaning the Glass Door

After the initial paint curing, a slight film may form on the glass. It is recommended to clean the glass with gas fireplace glass cleaner.

The glass will need to be cleaned periodically during the year. Use care when removing and cleaning the glass. In the event the glass needs replaced, contact a qualified service person. Only glass approved by Empire Comfort Systems Inc. may be used, any substitute glasses will void the warranty.

⚠ CAUTION

Do not attempt to clean the glass when it is hot. Do not strike or hit the glass.

⚠ WARNING

Do not operate this fireplace without the glass door in place. Do not operate if the glass front is broken or damaged. Do not use the glass door if the gasket is missing or is damaged.

⚠ CAUTION

Be certain the glass is cool before handling.

BAY WINDOW MANTIS MODELS

Removing the Glass Door

1. Remove the top of the cabinet.
2. Open the panels on the left and right sides. The panels pivot in place.
3. Release the two door latches on both the left and right sides of the firebox.
4. Carefully grab the glass frame and pull towards you. Do not damage or remove the gasket from the door.

FIREPLACE MANTIS MODELS

Removing the Glass Door

1. Remove the lower louvered panel by lifting up then pulling out.
2. Release the two hinge clips on underside of firebox.
3. Angle the bottom of glass assembly approximately 60 degrees out from firebox. Gently pull glass assembly away from firebox. Do not damage or remove the gasket from the door.

Resetting the Fireplace

To reset the fireplace, first turn both burner switches to the OFF position. Verify the red button next to the burners is not illuminated. If a Remote Control is fitted, turn the remote to the “OFF” position. Turn the power off at the power source for 5 minutes.

Turn the power back on, and verify the L.E.D. lights on the Control Panel Circuit Plate are illuminated. The burners should ignite in approximately 60 seconds. The circulating blower will start in 3 to 5 minutes. The blower may continue to operate after the burners are turned off.

⚠ WARNING

Potential risk of fire, electric shock, and personal injury. Take precautions to reduce such risks

⚠ CAUTION

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

If equipped, the Mantis can also be reset by switching the main power switch to the “OFF” position for 5 minutes. See Figure 77.

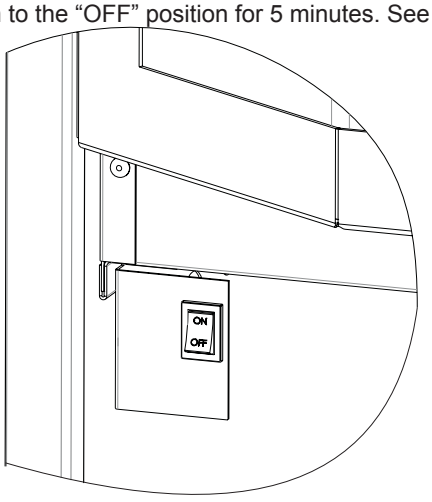


Figure 77

Circulating Air Blower
The circulating air blower should be checked and cleaned annually by a qualified service person to ensure that your fireplace is operating efficiently. Any dirt or lint can affect the operation of the blower.

Heat Exchanger
The heat exchanger is located on the backside of the fireplace. The heat exchanger should be inspected and cleaned annually by a qualified service person.

Filter
The filter is located on the inside of the lower louver panel (on fireplaces equipped with FIK, FFK or FWK Surrounds) or on the inside bottom flange of the surround (FHK Surrounds).
To clean the filter on fireplaces equipped with the lower louver panel, simply remove the panel and disengage the filter rod from its retaining holes (Figures 78 and 79).
For fireplaces equipped with louverless FHK surrounds, the entire surround must be removed from the fireplace. This is accomplished by lifting and removing the surround from the support bracket hooks. Remove the filter retainers and filters from the inside bottom flange by removing the screw holding the filter retainer in place (Figure 80).

The filters may be rinsed with water or blown clean with compressed air.

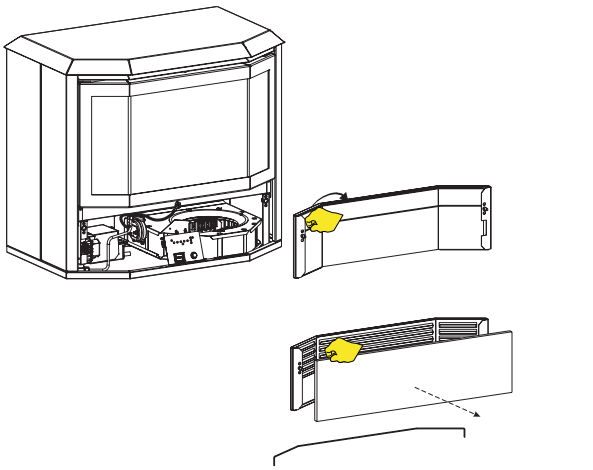


Figure 78

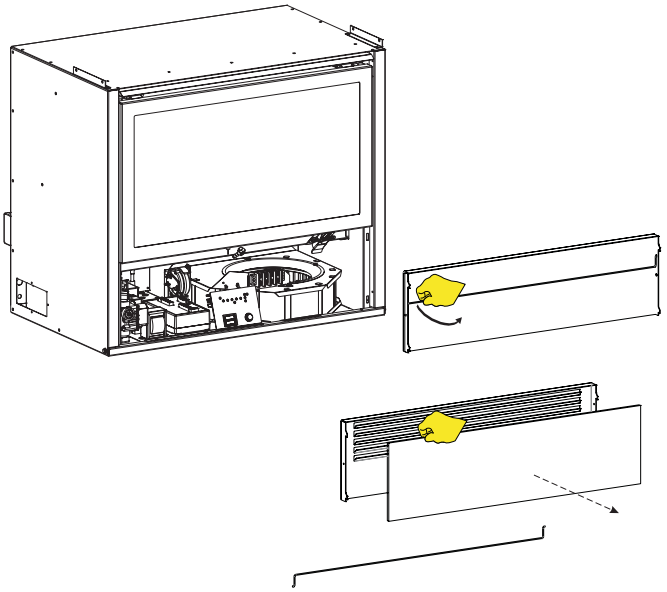


Figure 79

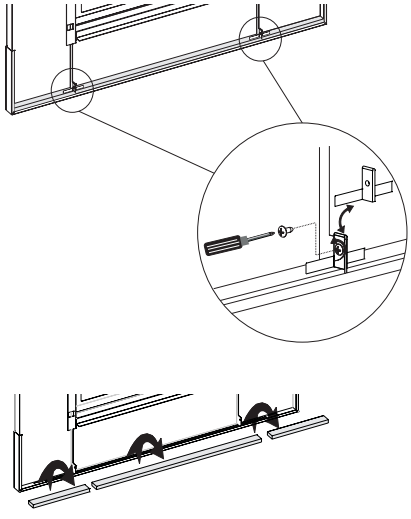


Figure 80

RECOMMENDED MAINTENANCE		
MAINTENANCE ITEM	FREQUENCY OF MAINTENANCE	
	MONTHLY BY HOMEOWNER	ANNUALLY BY SERVICE PERSON
Verify the area is free from combustible materials.	X	X
Verify the combustion and ventilation air is not restricted.		X
Verify the flue and inlet pipes do not have any cracks or holes.		X
Verify burner flame.		X
Clean the blower compartment		X
Clean the burner.		X
Verify the condensate system is clean and leak free.		X
Clean the filter	X	X
Clean the glass	X	X

If service is needed to the condensate pump, the wires must be attached in the same order they were removed (Figure 81). If the pump is replaced, follow the wire connection instruction label on the pump cover.

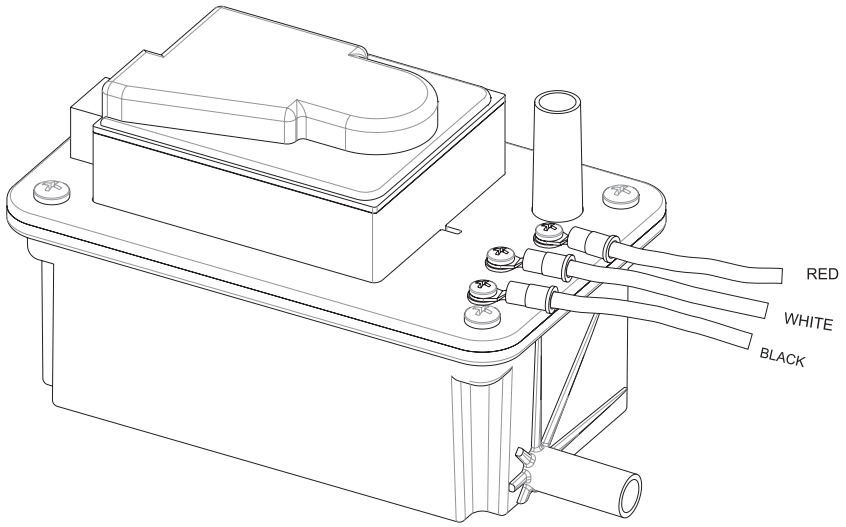


Figure 81

BAY WINDOW MANTIS PARTS LIST

⚠ WARNING

Use only manufacturer's replacement parts. Use of any other parts could cause injury or death.

INDEX NO.	PART NO.	DESCRIPTION
1	27072	REAR PANEL ASSEMBLY
2	21654	BRACKET, PIPE ASSEMBLY
3	24831	REAR HEAT SHIELD ASSEMBLY
4A	21664	TOP COVER ASSEMBLY (INCLUDES #5)
4B	22933	SLIM TOP ASSEMBLY
4C	22934	SHORT TOP ASSEMBLY
5	R8854	BALL STUD
6	22693	TOP HEAT SHIELD ASSEMBLY
7	26089	HEAT EXCHANGER TUBE ASSEMBLY (REQUIRES 2 #8)
8	R10337	GASKET, END PLATE (2 REQUIRED)
9	R9987	FLEX LINE - 24"
10	26087	SUMP ASSEMBLY (INCLUDES #14 & 10)
11	R10299	SWITCH, BIMETALIC
12	R8795	GASKET, SUMP
13	29721	HEAT EXCHANGER ASSEMBLY (INCLUDES #7, 8, & 12)
14	R10966	TUBING (SUMP TO PUMP)
15	21627	SHIELD, REAR INNER
16	25227	ELECTRIC PARTS PLATE
17	21667	LEFT SIDE DOOR ASSEMBLY
18	21605	COVER, INLET AIR DUCT
19	22780	INLET AIR DUCT ASSEMBLY
20	R10491	GASKET, INLET AIR DUCT
21	21641	BRACKET ASSEMBLY THERMISTER (SPRING CLIP INCLUDED)
22	R4053	CLAMP, DOOR (4 USED ON UNIT)
23	22773	THERMISTER ASSEMBLY
24	R10488	3/8 ELBOW, 90 (2 REQUIRED)
25	21640	BRACKET ASSEMBLY (SPRING CLIP INCLUDED)
26	21665	RIGHT SIDE DOOR ASSEMBLY
27	21651	TUBING (FIREBOX TO PRESSURE SWITCH)
28	R8835	FITTING, BARBED HOSE
29	22865	IGNITOR, HOT SURFACE ASSEMBLY
30	21611	BRACKET, IGNITOR
31	R8807	FLAME SENSOR
32	30626	LOG PLATE ASSEMBLY
33	22753	SMALL BURNER ASSEMBLY NAT (INCLUDES #35 AND 37)
33	26787	SMALL BURNER ASSEMBLY LP (INCLUDES #35 AND 37)
34	22658	LARGE BURNER ASSEMBLY - NAT (INCLUDES #36 AND 37)
34	26801	LARGE BURNER ASSEMBLY - LP (INCLUDES #36 AND 37)
35	R9831	BUSHING, AIR SHUTTER - FRONT NAT
35	R10675	BUSHING, AIR SHUTTER - FRONT LPG
36	R10675	BUSHING, AIR SHUTTER - REAR NAT
36	R10676	BUSHING, AIR SHUTTER - REAR LPG
37	R8790	BUSHING, BURNER
38	P208	REAR ORIFICE, LPG
38	P288	REAR ORIFICE, NAT
39	P208	FRONT ORIFICE, NAT
39	P307	FRONT ORIFICE, LPG
40	R10796	HOLDER, ORIFICE
41	R7572	JAMB NUT
42	27071	GAS LINE - REAR

BAY WINDOW MANTIS PARTS LIST

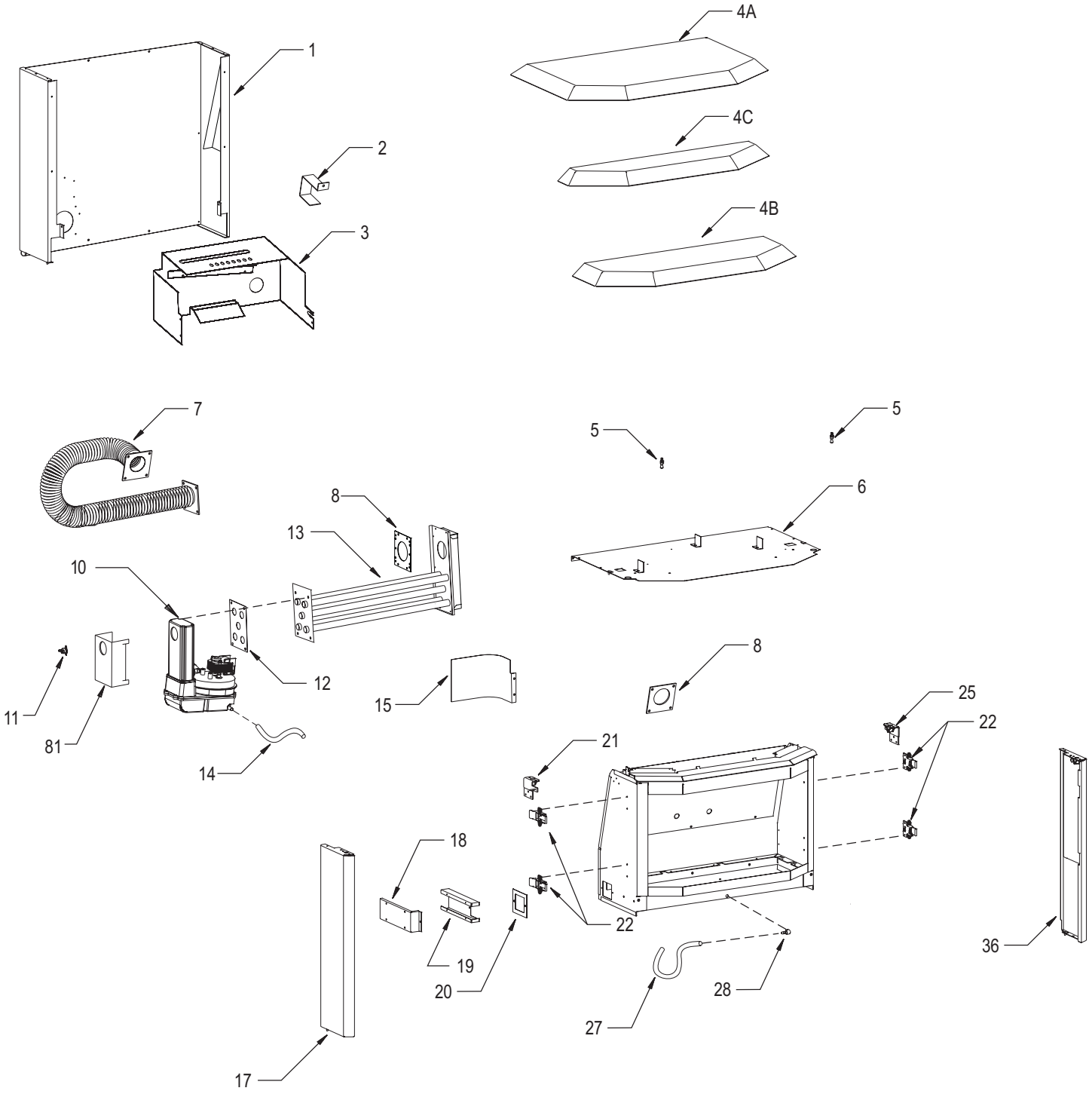
⚠ WARNING

Use only manufacturer's replacement parts. Use of any other parts could cause injury or death.

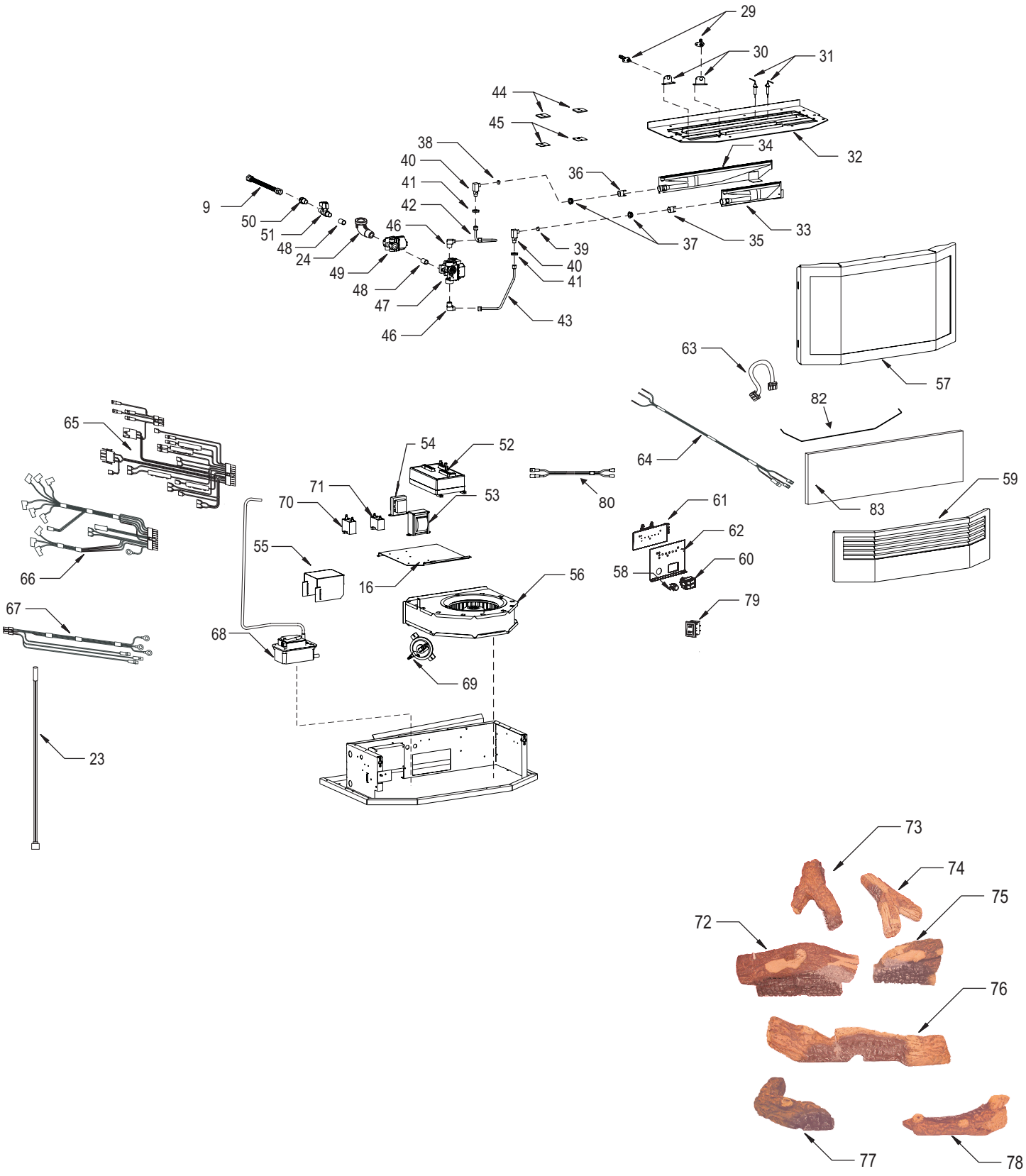
INDEX NO.	PART NO.	DESCRIPTION
43	26128	GAS LINE - FRONT
44	M174	GASKET
45	11269	GAS LINE BRACKET
46	R8886	COMPRESSION FITTING
47	R8812	VALVE, NAT
47	R8869	VALVE, LPG
48	R8898	PIPE NIPPLE
49	R8825	SOLENOID
50	R3312	CONNECTOR, MALE 3/8 X 3/8
51	R10072	SHUT-OFF VALVE
52	R10775	CONTROL BOX ASSEMBLY (INCLUDES #61 & 63)
53	R10043	TRANSFORMER 12-24V
54	R8804	TRANSFORMER 24V
55	25325	CONDENSATE PUMP COVER
56	27004	CIRCULATING BLOWER ASSEMBLY
57	21663	DOOR ASSEMBLY, BLACK
57	22758	DOOR ASSEMBLY, CHROME
57	22759	DOOR ASSEMBLY, GOLD
58	26582	FRONT PANEL ASSEMBLY (INCLUDES #82 & 83)
59	R8840	WIRE HARNESS ASSEMBLY WITH ECONOMY SWITCH
60	R8809	SWITCH, DOUBLE ROCKER
61	R8904	CIRCUIT BOARD
62	25226	CIRCUIT BOARD PLATE
63	R10759	RIBBON CABLE
64	R11043	CIRCUIT BOARD WIRE HARNESS
65	R10182	WIRE HARNESS, 120V
66	R10183	WIRE HARNESS 12V
67	R10190	WIRE HARNESS 12V

INDEX NO.	PART NO.	DESCRIPTION
68	29355	PUMP ASSEMBLY (INCLUDES #14 & 55)
69	R10489	AIR PRESSURE SWITCH
70	R8881	CAPACITOR 3uF
71	R8880	CAPACITOR 4uF
72	R11450	LOG, LEFT REAR
73	R11452	LOG, TOP LEFT
74	R11453	LOG, TOP RIGHT
75	R11451	LOG, RIGHT REAR
76	R11449	LOG, CENTER
77	R11447	LOG, FRONT LEFT
78	R11448	LOG, FRONT RIGHT
79	R2522	MAIN POWER SWITCH
80	R10610	WIRE HARNESS, MAIN POWER SWITCH
81	26119	HEADER COVER - OUTLET
82	R10707	FILTER ROD, FRONT PANEL
83	R10705	FILTER, FRONT PANEL
NOT SHOWN	FRBTC	THERMOSTAT

BAY WINDOW MANTIS PARTS VIEW



BAY WINDOW MANTIS PARTS VIEW



FIREPLACE MANTIS PARTS LIST

⚠ WARNING

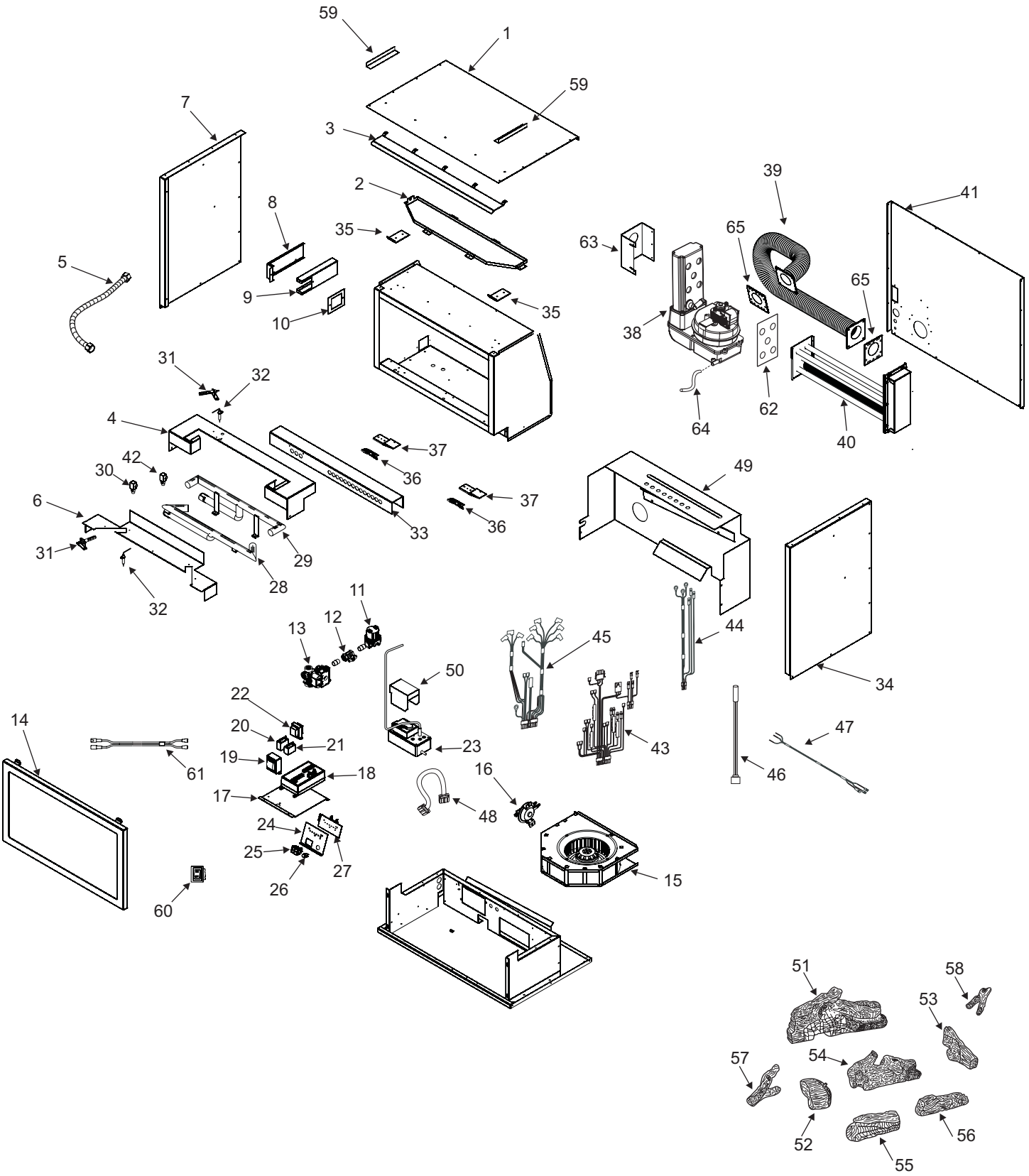
Use only manufacturer's replacement parts. Use of any other parts could cause injury or death.

INDEX NO.	PART NO.	DESCRIPTION
1	25207	PANEL - TOP
2	21595	CONDENSATE TRAY
3	25223	LOUVER - TOP
4	25212	REAR BURNER TRAY
5	R9987	FLEX LINE
6	26081	FRONT BURNER TRAY ASSEMBLY
7	25205	PANEL - LEFT SIDE
8	21605	INLET AIR DUCT COVER
9	22780	INLET AIR DUCT ASSEMBLY
10	R10491	INLET AIR DUCT GASKET
11	R8825	SOLENOID
12	R10072	GAS SHUT OFF VALVE
13	R8812	VALVE - NAT
13	R8869	VALVE - LPG
14	26071	GLASS ASSEMBLY
15	27004	CIRCULATING BLOWER ASSEMBLY
16	R10338	PRESSURE SWITCH
17	25227	ELECTRICAL PARTS PLATE
18	R10775	CONTROL BOX (INCLUDES #27 & 48)
19	R10043	TRANSFORMER 12-24V
20	R8881	CAPACITOR 3uF
21	R8880	CAPACITOR 4uF
22	R8804	TRANSFORMER - 24V
23	26075	PUMP ASSEMBLY (INCLUDES #50 & 64)
24	25226	CIRCUIT BOARD PLATE
25	R8809	DOUBLE ROCKER SWITCH
26	R8840	WIRE HARNESS ASSEMBLY WITH ECONOMY SWITCH
27	R8904	CIRCUIT BOARD
28	26083	FRONT BURNER ASSEMBLY
29	26082	BACK BURNER ASSEMBLY
30	R11012	ORIFICE HOLDER - FRONT
31	22865	HOT SURFACE IGNITOR (2 REQUIRED)
32	R10967	FLAME SENSOR (2 REQUIRED)
33	25210	AIR DUCT CHANNEL
34	25214	PANEL - RIGHT SIDE
35	25222	DOOR BRACKET (2 REQUIRED)
36	R4053	DOOR CLAMP (2 REQUIRED)
37	25225	LATCH BRACKET (2 REQUIRED)

INDEX NO.	PART NO.	DESCRIPTION
38	26087	SUMP ASSEMBLY (INCLUDES #62 & 64)
39	26089	FLEX PIPE ASSEMBLY (REQUIRES 2 #65)
40	29721	HEAT EXCHANGER ASSEMBLY (INCLUDES #39, 62, & 65)
41	25204	PANEL - BACK
42	R10796	ORIFICE HOLDER - REAR
43	R10182	WIRE HARNESS - 120V
44	R10190	WIRE HARNESS - 12V SMALL
45	R10183	WIRE HARNESS - 12V LARGE
46	R8814	THERMISTER
47	R11043	WIRE HARNESS - CIRCUIT BOARD
48	R10759	RIBBON CABLE
49	24831	REAR HEAT SHIELD ASSEMBLY
50	25325	CONDENSATE PUMP COVER
51	R11455	REAR LOG
52	RR1456	LEFT LOG
53	R10380	RIGHT LOG
54	R11457	MIDDLE LOG
55	R10378	FRONT LEFT LOG
56	R10377	FRONT RIGHT LOG
57	R10383	LEFT TOP LOG
58	R10382	RIGHT TOP LOG
59	25216	BRACKET, STANDOFF (2 REQUIRED)
60	R2522	MAIN POWER SWITCH
61	R10610	WIRE HARNESS, MAIN POWER SWITCH
62	R8795	GASKET - SUMP
63	26119	HEADER COVER - OUTLET
64	R10966	TUBING (SUMP TO PUMP)
65	R10337	GASKET, END PLATE (2 REQUIRED)
N/S	26117	AIR DUCT CHANNEL COVER PLATE - NAT ONLY
N/S	FRBTC	THERMOSTAT
N/S	R10093	ORIFICE #47 - NAT
N/S	R10094	ORIFICE #49 - NAT
N/S	R10095	ORIFICE #1.2MM - LP
N/S	R10096	ORIFICE #55 - LP
N/S	R10299	SWITCH, BIMETALIC
N/S	R10705	FILTER, FRONT PANEL
N/S	R10706	FILTER ROD, FRONT PANEL

N/S - Not Shown

FIREPLACE MANTIS PARTS VIEW



MASTER PARTS DISTRIBUTOR LIST

To Order Parts Under Warranty, please contact your local Empire dealer. See the dealer locator at www.empirecomfort.com. To provide warranty service, your dealer will need your name and address, purchase date and serial number, and the nature of the problem with the unit.

To Order Parts After the Warranty Period, please contact your dealer or one of the Master Parts Distributors listed below. This list changes from time to time. For the current list, please click on the Master Parts button at www.empirecomfort.com.

Please note: Master Parts Distributors are independent businesses that stock the most commonly ordered Original Equipment repair parts for Heaters, Grills, and Fireplaces manufactured by Empire Comfort Systems Inc.

Dey Distributing
1401 Willow Lake Boulevard
Vadnais Heights, MN 55101

Phone: 651-490-9191
Toll Free: 800-397-1339
Website: www.deydistributing.com
Parts: Heater & Hearth

East Coast Energy Products
10 East Route 36
West Long Branch, NJ 07764

Phone: 732-870-8809
Toll Free: 800-755-8809
Fax: 732-870-8811
Website: www.eastcoastenergy.com
Parts: Heater & Hearth and Grills

Victor Division of F. W. Webb Company
200 Locust Street
Hartford, CT 06114

Phone: 860-722-2433
Toll Free: 800-243-9360
Fax: 860-293-0479
Toll Free Fax: 800-274-2004
Websites: www.fwwebb.com & www.victormfg.com
Parts: Heater & Hearth and Grills

HOW TO ORDER REPAIR PARTS

Parts Not Under Warranty

Parts can be ordered through your Service Person, Dealer, or a Master Parts Distributor. See this page for the Master Parts Distributors list. For best results, the **service person or dealer** should order parts through the distributor. Parts can be shipped directly to the **service person/dealer**.

Warranty Parts

Warranty parts will need a proof of purchase and can be ordered by your Service Person or Dealer. Proof of purchase is **required** for warranty parts.

All parts listed in the Parts List have a Part Number. When ordering parts, first obtain the Model Number and Serial Number from the name plate on your equipment. Then determine the Part Number (**not** the Index Number) and the Description of each part from the following illustration and part list. Be sure to give all this information . . .

Appliance Model Number _____ Part Description _____

Appliance Serial Number _____ Part Number _____

Type of Gas (Propane or Natural) _____

Do not order bolts, screws, washers or nuts. They are standard hardware items and can be purchased at any local hardware store.

Shipments contingent upon strikes, fires and all causes beyond our control.

WARRANTY

Empire Comfort Systems Inc. warranties this hearth product to be free from defects at the time of purchase and for the periods specified below. Hearth products must be installed by a qualified technician and must be maintained and operated safely, in accordance with the instructions in the owner's manual. Empire will not warranty any Château, Boulevard, or Mantis fireplace that is not installed by the selling dealer or that dealer's direct contract agents. This warranty applies to the original purchaser only and is not transferable.
All warranty repairs must be accomplished by a qualified gas appliance technician.

Limited Lifetime Parts Warranty – Combustion Chamber, Heat Exchanger, and Factory-Installed Glass

If the combustion chamber, heat exchanger (see parts list) or factory-installed glass fails because of defective workmanship or material, Empire will repair or replace at Empire's option.

Limited Three-Year Parts Warranty – All Other Components

(Except Remote Controls, Thermostats, Accessories and Replacement Parts)

Should any part fail because of defective workmanship or material within three years from the date of purchase, Empire will repair or replace at Empire's option..

Limited One-Year Parts Warranty – Remote Controls, Thermostats, Accessories, and Parts

Should any remote control, thermostat, accessory, or other part fail because of defective workmanship within one year from the date of purchase, Empire will repair or replace at Empire's option.

Duties Of The Owner

The appliance must be installed by a qualified installer and operated in accordance with the instructions furnished with the appliance.

A bill of sale, cancelled check, or payment record should be kept to verify purchase date and establish warranty period.

Ready access to the appliance for service.

What Is Not Covered

Damages that might result from the use, misuse, or improper installation of this appliance.
Travel, diagnostic costs and freight charges on warranted parts to and from the factory.
Claims that do not involve defective workmanship or materials.
Unauthorized service or parts replacements.
Removal and reinstallation cost.
Inoperable due to improper or lack of maintenance.

How To Get Service

To make a claim under this warranty, please have your receipt available and contact your installing dealer. Provide the dealer with the model number, serial number, type of gas, and purchase verification. The installing dealer is responsible for providing service and will contact the factory to initiate any warranted parts replacements. Empire will make replacement parts available at the factory. Shipping expenses are not covered.

If, after contacting your Empire dealer, service received has not been satisfactory, contact: Consumer Relations Department, Empire Comfort Systems Inc., PO Box 529, Belleville, Illinois 62222, or send an e-mail to info@empirecomfort.com with "Consumer Relations" in the subject line.

Your Rights Under State Law

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

Empire Comfort Systems Inc.
918 Freeburg Ave. Belleville, IL 62220

If you have a general question about our products, please e-mail us at info@empirecomfort.com.
If you have a service or repair question, please contact your dealer.

www.empirecomfort.com